Risking the Future: Adolescent Sexuality, Pregnancy, and Childbearing, Volume II: Working Papers and Statistical Appendices

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Sandra L. Hofferth and Cheryl D. Hayes, Editors; Panel on Adolescent Pregnancy and Childbearing, National Research Council

VOLUME II

RISKING THE FUTURE

Adolescent Sexuality, Pregnancy, and Childbearing

WORKING PAPERS AND STATISTICAL APPENDIXES

Sandra L. Hofferth and
Cheryl D. Hayes, Editors

Panel on Adolescent Pregnancy
and Childbearing

Committee on Child Development
Research and Public Policy

Commission on Behavioral and
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National Research Council

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Foreword

Adolescent pregnancy and childbearing are matters of substantial national concern. Even the analysis and description of these phenomena, much less prescriptions for altering present trends, are highly controversial. And it is all too easy to avoid or to deal only obliquely with issues that arouse so many deep-seated emotions and convictions. There is, nonetheless, broad agreement that the personal and public costs resulting from unintended pregnancies and untimely birth are far too high to countenance an indifferent response. Discontinued educations, reduced employment opportunities, unstable marriages (if they occur at all), low incomes, and heightened health and developmental risks to the children of adolescent mothers are a few of the most obvious and immediate personal costs. Sustained poverty, frustration, and hopelessness are all too often the long-term outcomes. Furthermore, the welfare, Medicaid, and Food Stamp program costs in 1985 for families begun by a birth to a teenager reached $16.65 billion.

Programs and services to prevent pregnancy and improve the life chances of teenage parents and their children have appeared in increasing number since the mid-1970s, frequently stirring up powerful or vocal advocates and opponents. An ever more impassioned debate has drawn public, private, voluntary, and philanthropic organizations into a continuing pursuit for "solutions" to the perceived problems. Yet, after more than a decade of experience, there seemed to many observers an imbalance in emphasis between what people believed and what policy makers, professionals, and society in general knew about the impacts and cost-effectiveness of alternative prevention and amelioration strategies in light

of better scientific knowledge about early sexual and fertility behavior. There seemed to be distressingly little discussion about how various interventions work, for whom, under what circumstances, and with what intended and unintended effects. And what were the most promising directions for future policy and program development?

In 1983, at the urging of several of its members, the Committee on Child Development Research and Public Policy within the National Research Council proposed the establishment of a study panel to conduct a broad and dispassionate review of relevant research and program experience and to recommend approaches for policy formulation, program design, research, and evaluation. In 1984, with generous support from five foundations—the Rockefeller Foundation, the Ford Foundation, the William and Flora Hewlett Foundation, the Robert Wood Johnson Foundation, and the Charles Stewart Mott Foundation—the Panel on Adolescent Pregnancy and Childbearing began its study. Over a two-year period, this broadly interdisciplinary 15-person panel and its staff and consultants undertook three major tasks: (1) to assemble, integrate, and assess data on trends in teenage sexual and fertility behavior; (2) to review and synthesize research on the antecedents and consequences of early pregnancy and childbearing; and (3) to review alternative preventive and ameliorative policies and programs.

In meeting its charge, the panel developed two volumes. Volume I presents the panel's findings, conclusions, and recommendations. Detailed background reviews of existing research on factors affecting the initiation of sexual intercourse, contraceptive use, pregnancy and pregnancy resolution, and the consequences of teenage pregnancy, childbearing, and parenting for young mothers, fathers, and their children, as well as the costs and effects of policies and programs, constitute Volume II. Also included in Volume II is a comprehensive statistical appendix presenting data from a variety of sources on trends in teenage sexual and fertility behavior. Throughout Volume I the panel refers to the papers and the statistical appendix in Volume II to support its deliberations. The panel based its study on both existing information and new analyses of existing data. These sources were supplemented by workshops and individual discussions with many federal, state, and local policy makers, program designers, service providers, and evaluators, as well as site visits to a variety of programs across the nation. In accordance with institutional policy, this report has been extensively and thoroughly reviewed by individuals other than members of the study panel.

In recent years, many other individuals and groups representing an array of moral, philosophical, and political perspectives have addressed the complex and controversial issues surrounding adolescent pregnancy. Many have developed recommendations and guidelines for policy makers, service providers, parents, and adolescents themselves. This report is one step in a continuing process of inquiry, review, and synthesis. As a scientific body, the Panel on Adolescent Pregnancy and Childbearing sought to clarify the issues, sharpen awareness of crucial decision points, and define the limits of existing knowledge. Although science cannot resolve issues that are inextricably bound to differences in human values, it can illuminate the trade-offs among different political and ideological positions, and we believe this report will inform the continuing public debate.

On behalf of the members of the parent Committee on Child Development Research and Public Policy, I would like to acknowledge the special contribution of Daniel D. Federman, who served as panel chair. His commitment of time, energy, and intellectual resources over the past two years has been extraordinary. In large part, the success of this study is due to his exquisite leadership. Acknowledgment is also due to the other members of the Panel on Adolescent Pregnancy and Childbearing. All gave generously of their time and knowledge throughout the study. As a diverse group of individuals, they are to be commended for producing a unanimous report on a topic that inevitably raises public controversy and stirs personal convictions.

The members of the panel join the committee in extending our great appreciation to the staff of the study. Cheryl D. Hayes, the study director for the panel as well as the parent committee, once again demonstrated the enormous energy, outstanding thoroughness, and great skill for which she is well known to many of us. Special thanks go also to Celia Shapiro, staff assistant to the committee and the panel, for her tireless attention to administrative detail throughout the study and for her patience and persistence in assembling the references for the two volumes. We gratefully acknowledge the significant contribution of Sandra L. Hofferth of the National Institute of Child Health and Human Development, who authored many of the research reviews that informed the panel's deliberations and coedited Volume II of the report. The efforts of Dee Ann Wenk of the University of Kentucky, who served as statistical consultant and worked with members of the panel and the staff in compiling the data and preparing the numerous tables and figures that appear in the report and the

statistical appendix, are also gratefully acknowledged. Margaret A. Ensminger and Donna M. Strobino, both of Johns Hopkins University, served as consultants and authored thoughtful background papers that are included in Volume II. Finally, Christine L. McShane, editor for the Commission on Behavioral and Social Sciences and Education, edited the report with a critical eye and managed the final production of the volumes.

The panel has also benefited from the contributions of several individuals who prepared special tabulations of existing data to help it address a number of difficult issues that remain unresolved in the available research. Special thanks are due Frank Mott of the Center for Human Resource Research at Ohio State University, William Pratt, Marjorie Horn, Christine Bachrach, and Stephanie Ventura of the National Center for Health Statistics, and Stanley Henshaw of the Alan Guttmacher Institute. Many other individuals played an important role in the panel's deliberations by providing information, critical analysis, advice, and reviews of the draft report and the draft background papers. Their thoughtful comments and insights are reflected in the final manuscripts.

Finally, this study would not have been possible without the generous support of our foundation sponsors. On behalf of the Committee on Child Development Research and Public Policy, I would like to extend special thanks to Mary Kritz of the Rockefeller Foundation, Prudence Brown of the Ford Foundation, Anne Firth Murray of the William and Flora Hewlett Foundation, Paul Jellinek of the Robert Wood Johnson Foundation, and Marilyn Steele of the Charles Stewart Mott Foundation. Their encouragement and advice greatly enhanced the study at every stage.

WILLIAM A. MORRILL, Chair
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Research and Public Policy

Preface

No human experience is at once so transiently private and lastingly public as an unintended pregnancy. When the mother herself is a young adolescent, only partially educated and almost wholly economically dependent, the pregnancy is inevitably enmeshed in a ragged tapestry of personal, interpersonal, social, religious, ethical, and economic dimensions. The peculiarly human gap between reproductive maturation and social self-sufficiency sets the stage for the problem. Many factors beyond the control—even the ken—of the young people involved complicate the scene. At every point, external expectations batter on newly emerging drives, challenging young adolescents to balance immediate satisfaction and long-range consequences radically disproportionate from anything they have previously had to deal with. It is little wonder that in this very complicated arena research has been difficult and social consensus elusive.

Our panel was convened to collect, review, and evaluate the data on trends in adolescent pregnancy and childbearing and on the antecedents and consequences of this phenomenon and to initiate proposals for the evolution of potentially helpful programs. We had the generous support of five foundations: the Ford Foundation, the Rockefeller Foundation, the William and Flora Hewlett Foundation, the Robert Wood Johnson Foundation, and the Charles Stewart Mott Foundation, all of which have demonstrated a long-standing interest in issues associated with adolescent pregnancy and childbearing. Many have made substantial investments in a growing body of relevant research and a lengthening list of targeted programs. Their interest in this study—and indeed, as a panel of scholars and experts, our interest in undertaking it—is a concern about the prob-

lems of early unintended pregnancy and parenting in our society and what is known about how to effectively address them. Our sponsors were models of what scholars hope for—generous, supportive, and never intrusive. The project officers were consistently helpful, but at no time was any of our work constrained by the foundations nor beholden to them. The staff of the National Research Council was consistently supportive, and our study director, Cheryl Hayes, who also serves as executive officer of the parent Committee on Child Development Research and Public Policy, was at once a colleague, a paragon, and the principal drafter of the report.

Few people can approach the problem of teenage pregnancy dispassionately. Becoming sexually active, using contraception, considering abortion or adoption—every step is invested with a panoply of moral and religious questions, and these decisions are often undertaken alone by a frightened and immature young woman who would be considered a child in nearly any other context. A consciousness of this poignance pervades our report, and deliberately so. The panel believes that at each step—however much one may wish for a different outcome of a prior decision—the potentially or actually pregnant teenager should be treated kindly and warmly and should have a complete set of options available without the interposition of moral hounding or economic barriers.

In general, we believe preventive strategies should be given more public and private support than is now available. An international comparison study by the Alan Guttmacher Institute, of which the panel was beneficiary, provided valuable insight into the role of preventive services in countries of comparable levels of teenage sexual activity.

Many social circumstances are closely related to the problem of teenage pregnancy and childbearing. Youth unemployment, poverty, poor education, single-parent families, television content—all these and more are accompaniments and very likely determinants of the high rates of adolescent pregnancy in the United States. The hope for a solution to the problem of teenage pregnancy is illusory without simultaneous amelioration of some of these contributing factors. Pending such comprehensive change, the panel urges prevention rather than denial, kindness rather than exhortation, and research rather than doctrine.

DANIEL D. FEDERMAN, Chair
Panel on Adolescent
Pregnancy and Childbearing

ADOLESCENT PREGNANCY AND CHILDBEARING: AN EMERGING RESEARCH FOCUS

Cheryl D. Hayes

In the past decade, teenage pregnancy and childbearing have become issues of broad public concern. Approximately 1 million adolescent girls become pregnant in the United States every year. While about 400,000 of them obtain abortions, nearly half give birth. The majority of these births are to unmarried mothers, nearly half of whom are under age 18.

The United States leads all other Western developed countries in its rates of adolescent pregnancy, abortion, and childbearing, even though the age of initiation and rates of sexual activity in these countries are comparable. The difference is most striking among the youngest teenagers, those under age 15, who are more than five times as likely to give birth as girls in any other developed country of the world.

Almost any newspaper or popular journal reminds one of these disturbing facts. The news media has stressed the epidemic nature of adolescent pregnancy. Despite the fact that birth rates among teenagers have actually declined somewhat since 1970, policy makers, professionals, parents, and researchers have debated the meaning of these social and demographic trends and have repeatedly called for immediate responses to the "impending crisis." As a result, the past decade has witnessed an enormous growth in efforts to understand these changing social and demographic patterns. Policies and programs to prevent untimely and unintended pregnancies among teenagers and to overcome the frequently negative social, economic, and health consequences of early childbearing and parenting have also expanded. The process has been iterative. In some cases knowledge has spurred public decision making and the initiation of interventions; in others, the need for action has highlighted and motivated the need for more and better information about factors affecting these behaviors and their outcomes.

Efforts to increase knowledge in these areas have been supported both by federal agencies as well as private foundations. In the mid-1970s, the Center for Population Research within the National Institute of Child Health and Human Development (NICHD) targeted adolescent pregnancy as a priority for research support. Over the past

decade, the center has administered a broad program of research, including the collection of national survey data on adolescent sexuality, contraceptive use, and pregnancy resolution, as well as analyses of the antecedents and outcomes of these sensitive behaviors. Since 1982, the Office of Adolescent Pregnancy Programs (OAPP) has also supported an array of studies of familial, institutional, and societal influences on early sexual behavior and adoption, as well as the provision of services to pregnant and parenting teenagers. Notably absent from the OAPP agenda, however, have been studies of factors affecting contraceptive use and ways to encourage more diligent use among teenagers who are sexually active.

Several private foundations have also played a key role in research and development to address the problems of adolescent pregnancy and childbearing. The Ford Foundation, with a commitment to reduce poverty and ameliorate its devastating effects on minority populations, began in the late 1970s to support several studies of black-white differences in teenage sexual and fertility behavior, the link between early childbearing and welfare dependence, and international comparisons. In partnership with the U.S. Department of Labor, the Ford Foundation initiated a comprehensive services model to enhance the employability and economic self-sufficiency of teenage mothers. The Rockefeller Foundation and the Hewlett Foundation, because of their strong interest in international family planning issues, also began to support research and demonstration activities aimed at exploring factors affecting teenage fertility and ways of enhancing young people's knowledge and use of contraception. Similarly, the Charles Stewart Mott Foundation, because of its commitment to improving the plight of disadvantaged groups, targeted teenage parents as a population in need and established its Too Early Childbearing network of innovative community-based programs to enhance the well-being of teenage mothers and their children. More recently, the W.T. Grant Foundation, because of its interest in adolescent development, the Robert Wood Johnson Foundation, the Glenmede Trust, and the Kaiser Family Foundation, because of their interests in health promotion, and the Carnegie Corporation, because of its interest in the prevention of harm to children, have initiated and supported a variety of research and demonstration activities aimed at pregnancy prevention.

In addition, in the past several years, a number of local foundations, sometimes independently and sometimes in partnership with larger national foundations, have supported the initiation of a variety of community-based programs to help reduce the incidence of pregnancy among teenagers and to support the special needs of pregnant and parenting teenagers. Recently, many of these have been specifically aimed at strengthening state and local responses.

As a result of these public and private initiatives, there has been a significant expansion of knowledge about adolescent pregnancy and childbearing from a variety of sources. Despite some inconsistencies among these data sets, we now have generally reliable estimates of

sexual activity, including age of initiation, frequency of intercourse, and partners. Similarly, knowledge of contraceptive use has also increased, including the timing of initiation, methods chosen, patterns of use, and contraceptive failure. Information concerning pregnancies and abortions is believed to be less reliably reported in surveys than that concerning sexual activity and contraception, and therefore estimates of these behaviors should be viewed with greater caution. Data on births, including the type of delivery and the health status of mother and baby, are highly reliable, as are data concerning marriage, educational attainment, and employment status. In contrast, information concerning adoption appears to be the largest gap, since there is currently no national reporting system to collect data on adoptions, including characteristics of the biological mother and father. Although other problems affect current understanding of adolescent pregnancy and childbearing, including the lack of consistency with regard to race and ethnicity across data sources and the difficulty of obtaining information about males and very young teenagers, knowledge about trends in teenage sexual and fertility behavior has greatly improved over the past decade.

Similarly, the number and sophistication of studies concerning the consequences of early pregnancy and childbearing have increased dramatically. The variety of social, economic, and health outcomes have been carefully and convincingly documented. We know with certainty that, for the majority of teenage parents and their children, the prospects of a healthy and independent life are significantly reduced. In the absence of adequate nutrition and appropriate prenatal care, teenage mothers are at a heightened risk of pregnancy complications and poor birth outcomes. They are also at a heightened risk of experiencing a subsequent pregnancy and birth while still in their teens. The infants and young children of teenage mothers experience greater health and developmental risks, for example low birthweight, infant mortality, disease and accidents, low IQ, poor school performance, and a variety of social and emotional problems. Teenage marriages, when they occur, are characterized by a high degree of instability. Teenage parents, both male and female, all too often suffer reduced educational attainment and a related limitation of career opportunities. They are at a heightened risk of becoming dependent on public assistance and remaining dependent for longer periods than their peers who delay childbearing into their twenties. And perhaps most disturbing of all, the children of teenage mothers are themselves more likely to become pregnant and give birth as teenagers. Society's economic burden in maintaining these families is substantial--an estimated $16.65 billion in federal outlays for Aid to Families With Dependent Children (AFDC), food stamps, and Medicaid alone in 1985.

Knowledge of the antecedents of early pregnancy and childbearing has also grown. A variety of conditions and circumstances have been shown to be associated with these behaviors. Among the most significant are social and economic disadvantage. Young people growing up in families

that have known sustained poverty, whether in urban ghettos or rural areas, become sexually active at a younger age and are therefore at heightened risk of early pregnancy. Those who have grown up in fatherless families and those whose mothers began their own childbearing as a teenager are at a heightened risk of experiencing an untimely and unintended pregnancy. Those who attend racially isolated schools and live in poor, segregated neighborhoods in which early childbearing and single parenthood are familiar patterns are more likely to become sexually active at a young age and experience a pregnancy than are young people living and going to school in more prosperous and racially diverse environments. Moreover, teenage girls who are experiencing academic problems, who have low academic and career expectations, and particularly those who have dropped out of school, appear to be at a heightened risk of becoming pregnant. The younger an adolescent girl is at the time of sexual initiation, the more likely she is to experience a pregnancy as a teenager, both because her exposure to the risk of pregnancy is more prolonged, and because she is more likely to delay obtaining a contraceptive method and less likely to use it effectively, if at all.

In the growing number of studies of factors affecting the initiation of sexual activity and contraceptive use, these antecedent conditions have frequently been shown to be associated with teenage pregnancy. But correlation does not establish causation. Although we know with certainty that they go hand in hand, we do not have sufficient evidence to declare that poverty, poor school performance, growing up in a fatherless family, or having a mother who had her first baby as a teenager is a direct cause of adolescent pregnancy.

Knowledge of how to reduce the incidence of early, unintended pregnancy and of how to overcome the negative effects of an early birth is far less firm than knowledge of the antecedents and consequences of teenage pregnancy and parenting. The number and variety of preventive and ameliorative interventions has increased dramatically since the mid-1970s. Yet knowledge of what works, for whom, under what circumstances, with what effects, and at what costs has not kept pace with understanding of the behaviors these programs are intended to influence.

In part this is because many programs have been launched by creative and enthusiastic service providers who lack the necessary research skills and financial resources to include evaluation in their program design. In addition, the evaluation of human service programs poses numerous theoretical, methodological, and practical problems that inhibit researchers and affect the quality of the results that are obtained. Program evaluations have been scarce, and studies have often failed to identify and examine the range of relevant direct and indirect outcomes. Thus, for example, we don't know the effects on teenage pregnancy rates of interventions to boost school achievement, because fertility outcomes typically have not been studied in assessing

education programs. In addition, the quality of the results obtained from evaluations of adolescent pregnancy programs has been highly variable, and few impact studies, even those that have been methodologically strong, have been continued over a sufficient period of time to reveal long-term outcomes. As a result, this body of research has frequently failed to yield a firm scientific base on which to build policies and programs. The costs, effects, and effectiveness of few interventions have been clearly demonstrated, although there are two notable exceptions: programs to encourage contraceptive use among sexually active teenagers have been shown to reduce the rate of pregnancy among program participants; and programs to provide prenatal care to pregnant teenagers have been shown to reduce the incidence of pregnancy complications and to improve birth outcomes for young mothers and their babies.

Yet program research has provided numerous insights concerning interesting and potentially promising approaches to prevent untimely and unintended pregnancies and to enhance the well-being of adolescent parents and their children that merit further development and evaluation. Among the most promising are programs to enhance life options, those intended to motivate teenagers to avoid pregnancy and parenting at this stage in their lives, by enhancing their academic performance, employability, and goal setting skills. Programs to encourage teenagers to delay sexual initiation similarly require further development and evaluation as a basis for future policy decision making.

The chapters of this volume contain the background papers that informed the deliberations of the Panel on Adolescent Pregnancy and Childbearing and support many of its conclusions concerning the current state of knowledge. Chapters 1 through 4 present detailed reviews of the research on factors affecting adolescent sexual decision making, including the initiation of sexual activity, contraceptive use, and pregnancy resolution. Chapters 5 through 8 review the scientific evidence on the short-term and long-term social, economic, and health consequences of early sexual activity, pregnancy, childbearing, and parenting. Chapters 9 and 10 review evidence concerning the costs, effects, and effectiveness of alternative programs. The tables referred to in Chapters 1-10 are found in the statistical appendix.

Each of these chapters presents an analytic overview and summary of the available research. Each also includes a critique of the research, speculations about its meanings, and suggestions for needed research, as well as some implications of findings for policies and programs. The authors were selective in their presentation and review of studies. Some, including published articles and books, were judged to be methodologically inadequate, and their inclusion was deemed inappropriate.

The appendix to the volume contains a detailed statistical compilation of data on adolescent sexual and fertility behavior from a

variety of sources. Many of these tables have been published elsewhere; others present special analyses of existing data commissioned by the panel to answer key questions that arose in the course of its study. Each table is accompanied by a brief narrative highlighting the key points that emerge from the data.

Taken together, these papers and the statistical appendix represent a valuable resource for researchers, policy makers, and program designers, who regularly need information on trends in teenage sexual and fertility behavior, on the antecedents and consequences of pregnancy and childbearing among teenagers, and on the costs, effects, and effectiveness of alternative programmatic strategies.

Influences on Early Sexual and Fertility Behavior

CHAPTER 1

FACTORS AFFECTING INITIATION OF SEXUAL INTERCOURSE

Sandra L. Hofferth

INTRODUCTION

The initiation of sexual intercourse is an important topic in the study and prediction of fertility. In their theoretical analysis of fertility and its determinants, Davis and Blake (1956) argued that socioeconomic and other factors affect fertility only through its proximate determinants, that is, through exposure to sexual intercourse, exposure to conception, given intercourse, and gestation and successful parturition, given conception. Since under all but exceptional circumstances, conception does not occur without it, sexual intercourse is the first of these proximate factors to be examined. In the past, fertility was studied primarily within marriage. This was not only due to the difficulty of obtaining information on sexual behavior, but also to the assumption that intercourse takes place primarily within marriage. However, recently the study of sexual intercourse itself has taken on more importance. This is, first, because of the increased separation of sexual activity from marriage. A substantial amount of sexual activity and, thus, exposure to the risk of pregnancy occurs outside the marriage relationship. As a result, an increasing proportion of childbearing occurs outside of marriage--12 percent of white and 57 percent of black children were born to an unmarried mother in 1982 (NCHS, 1984). Although some teens are married, the majority are not. The proportion of out-of-wedlock childbearing is even higher among teenagers. Thirty-six percent of births to white teens 15-19 and 87 percent of the births to black teens 15-19 occurred outside of marriage in the United States in 1982 (NCHS, 1984). Another important factor is the increase in cohabitation (Spanier, 1982; Blanc, 1984). Although the number of cohabiting couples with children in the United States is relatively small (about 30 percent), it increased between 1975 and 1980 (Spanier, 1983). Thus not only is the study of factors affecting the initiation of sexual activity among unmarried as well as married women important today, but it has become critical to any prediction of future fertility.

A second important reason for studying the initiation of sexual intercourse is that, above and beyond its impact on fertility, too early sexual activity in or outside of marriage may not be desirable

for the youth involved. This is an important issue. Since almost everyone eventually becomes sexually active, what age is "too early" is an important question, but one which is continually being redefined by changes in patterns of sexual activity and the definition of "too early" varies by individual. It is generally based on judgements about maturity and physical development that do not progress at the same speed or age for all people. The definition and the consequences sexual activity may have for an adolescent also vary across groups in the society which hold different views on what behavior is appropriate. To define what age is "too early" will require even closer social science scrutiny to its consequences net of childbearing.

This chapter focuses on the initiation of sexual intercourse among teenagers. Because of potential differential interest in teens at different ages, ages are divided, where possible, into the three age groups most commonly used in the data: less than 15, 15 to 17, and 18 to 19. Unfortunately little information is available for the under 15 age group, but data will be presented when available.

This paper also focuses on the initiation of sexual intercourse rather than a variety of other sexual activities, primarily because the major interest is in behavior that involves pregnancy risk. However, an additional reason is that the traditional ordered scale of sexual activities which is often used--holding hands, kissing, necking, petting above the waist, petting below the waist, intercourse--does not appear to apply to blacks. That is, blacks are likely to have experienced intercourse before behaviors "earlier" on the scale (Smith and Udry, 1985).

The outline of this chapter is the following: The incidence of sexual intercourse among teenagers is first described. Second, a model of the process of initiation of sexual intercourse is discussed. Third, research bearing on each of the aspects of the model is discussed, following the same logical outline. In particular, the empirical evidence on the linkages between background factors and sexual intercourse is presented, followed by evidence on the intervening linkages between background and intercourse. The chapter focus is on the research that sheds some light on the process whereby background factors affect sexual activity, that is, on explaining sexual activity. The reader should continue to refer the model, as the outline follows it closely.

BACKGROUND

According to a nationally representative sample of women in 1982, 43 percent of never married women 15 to 19 said they had had sexual intercourse Pratt et al., 1984). The proportion of all never married teens who report being sexually experienced rises from a low of 18 percent for 15 year olds to 66 percent for 19 year olds. Blacks are more likely to report sexual experience than whites. These percentages

are shown in Table 1.3. Experience rises almost linearly with age. National figures for 1983 on the sexual experience of teen men show that by age 18 two-thirds have experienced intercourse (Table 1.4). Using 1983 data to compare rates of intercourse among men and women (Table 1.4), it is clear that a higher proportion of males than females of a given age report having experienced sexual debut, although the differences decline with age.

Unfortunately, only one national data set, the NLS provides data on the sexual activity of teens under age 15 (Table 1.4). Most data we have come from a variety of small area studies; as a consequence the samples vary considerably from study to study. Table 1.5 shows estimates of sexual activity among males and females in several of these small studies. The estimates for young white male and female teens and for black females are consistently lower than estimates for older teens, as one would expect. The estimates for black males, in contrast, are very high, in some cases higher than those of older teens, which suggests low data reliability or unusual samples (e.g., low SES), among this group.

Of course, having had intercourse once does not necessarily mean the youth has intercourse frequently or regularly. However, it appears that, lacking data on frequency of sexual activity, a measure of ever having had intercourse is a relatively good proxy.

In 1982 only 5 percent of teenagers 15-19 who ever had intercourse said they had it only once. Almost half of white teens and three in ten black teens said that they had second intercourse within one month after the first. Two-thirds of both races had second intercourse within three months of first intercourse.

However, having ever had sex doesn't mean that a young woman is currently sexually active, that is, had sex during the last three months. In 1982, of those teenagers who had ever had sex, 18 percent had not had sex in the past three months, 16 percent had it only once a month, 25 percent 2-3 times per month, 21 percent once a week, 16 percent more than twice a week, and only 3 percent daily (Table 1.7). Sex is more frequent among the 18-19-year-olds than either 15-17-year-olds or 29-24-year-olds. Frequency of intercourse is related to the nature of the relationship with the partner--the more committed/steady the relationship (e.g., going steady, marriage plans), the more frequent the sexual activity (Zelnik et al., 1981).

Nor does having had intercourse as a teenager imply casual sex, that is, sex with a large number of partners or with casual acquaintances. According to 1979 data from a national sample, about half of all females who have had sexual intercourse have had only one partner (Table 1.8). Although a smaller proportion of blacks (41 percent) than whites (51 percent) have had only one partner, a slightly larger proportion of white than black teens have had 6 or more partners--9 percent versus 5 percent of blacks. Of course, the number of partners

is related to the length of time sexually active--such that those who have been active longer have had more partners (Zelnik et al., 1980).

Table 1.9 shows that the majority of women and over a third of men were going steady or engaged to be married at sexual debut. Adding dating raises the proportion of women in a dating or serious relationship at debut to almost 90 percent, and the proportion of men to over half. That is, only a small proportion of women (10 percent) compared to about 2 out of 5 men have first intercourse with a casual partner. The type of relationship with the partner at sexual debut varies by age of the youth. For both males and females, the younger the age at debut, the more likely the first relationship was of short duration (recently met), of friendship rather than romance (Table 1.10).

Table 1.11 shows where teen women say their first premarital intercourse took place. In 1979 the largest proportion reported that first intercourse occurred in the home of the partner; the next largest proportion reported that it occurred in the respondent's home or the home of a relative or friend.

One issue of importance is the extent to which initiation of sexual intercourse is voluntary or involuntary, such as a result of rape or incest. This is especially important for the very youngest teens. Unfortunately we have no reliable information at the national level.

A MODEL OF SEXUAL ACTIVITY

The model of the initiation of intercourse used in this paper builds on models from Udry, 1978; Fox et al., 1982; Philliber, 1980a, 1980b; Chilman, 1983. There are two major components or factors in the model: On the left is the biological component, on the right the psychosocial component. Interaction between the two sides is represented by the double-headed arrow connecting the biological and psychosocial processes (Figure 1).

Biological

The biological process of maturation involves the development of innate physical capacities, including motor skills, the development of hormonally linked sex motivation or "sex drive," and physical maturation. Those aspects of development that each individual experiences are included here.

Psychosocial Agents

Society/culture/subculture. This includes characteristics of the larger society that affect individuals through membership or residence in certain groups or communities. These include the cultural patterns

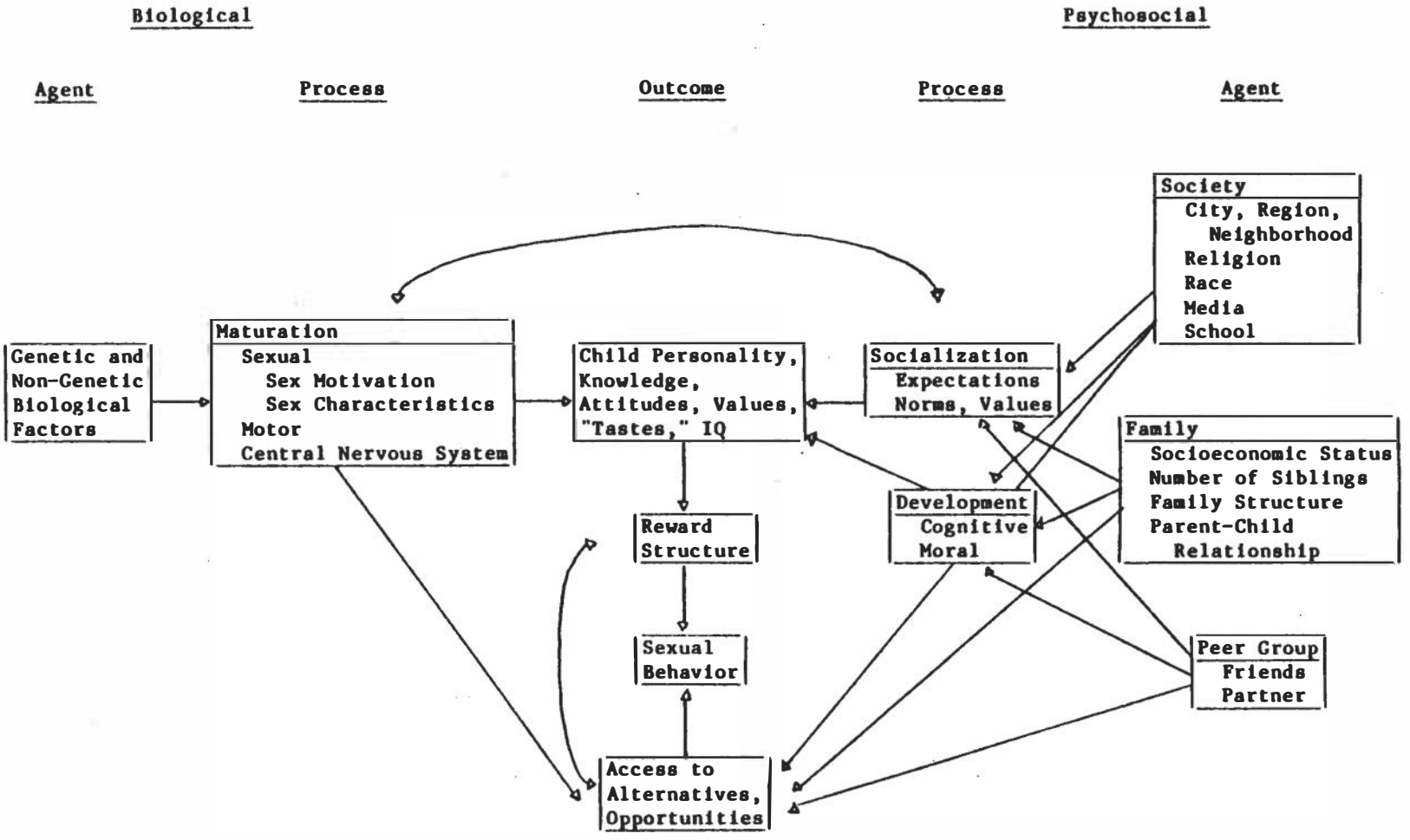

Figure 1: Model of Initiation of Sexual Activity

of the broader society (e.g., the nation) and of smaller reference groups, including the neighborhood, city and region. Race, ethnicity, social class and religion also constitute reference groups. These contexts represent different societal norms and values which affect the values, norms and beliefs each individual holds, including those of sexuality and fertility. The school and the media also represent contexts. The school affects the educational experiences and levels of achievement of young persons. The media may represent a leveling influence since the national networks provide uniform influence across cultural groups and settings.

Family. Probably the most important influence on children is their family of origin. There are many aspects to the family that could affect sexual behavior: 1) The education, occupation and income of parents, the parents' own family background, and parents' age at marriage and first birth; 2) The number of parents in the family, the number of children, the presence of other family members; 3) Family experiences, such as divorce or separation, and the interactions among family members, including degree and effectiveness of communication. Finally, 4) the attitudes, values and norms of family members are important aspects of this context.

Peers. It is often assumed that during adolescence the family as context for socialization declines in importance and the peer group increases in importance. Included under peer group here are the values and attitudes of significant others e.g., close or best friends--as well as their actual behaviors, and the extent of match between individuals' beliefs about friends' behavior and attitudes and actual behavior and attitudes.

Process

The major mechanism through which these three factors affect individuals is globally labeled "learning." There are two basic aspects of this process: socialization and development. Socialization emphasizes the interpersonal content of learning; development emphasizes the individual context of learning. They reflect concepts developed in two different fields: sociology and psychology respectively. The overall process is one that involves learning. There are several important mechanisms of learning:

Direct verbal communication. This includes information provided by the media (magazines, books, popular music, television, etc) as well as conversations with parents and friends, and direct teaching in schools, churches and other institutions.

Sanctioning. This includes direct and indirect rewards for proper or appropriate behavior and sanctions for violation of behavioral standards. Rewarding desired behavior and punishing undesired behavior are the most direct methods of socialization. However, they are not the only methods.

Modeling. Children appear to learn the behavior of models without actual rewards and punishments. Not all elements of behavior are copied, and some models are copied more than others, especially those in control of desired resources.

Internalization of norms and values. Children learn rules, norms and values, which they take as guide to their own actions. These may have direct sanctions, such as the approval or disapproval of "significant others" associated with them, or the sanctions may be indirect, such as through internalized guilt or expectations of such sanctions. They may also include strongly held beliefs such as moral disapproval of sex outside marriage.

Outcomes

The results of this process are conceptualized as the personality of the child, that is, the set of attitudes and values that make up the individual, as well as his or her physical and cognitive capacities and psychosocial characteristics such as self-esteem.

These physical, cognitive and social aspects of the individual determine his or her utility or reward structure, i.e., how he or she evaluates the consequences of certain behaviors and, as a result, that particular individual's incentive structure or predilection to act (Udry, 1978). This incentive structure is what subsequently determines behavior in a particular situation.

The final aspect of the model is that of opportunity and access to alternatives. The individual may be predisposed by the earlier part of the model to act in a certain way in a certain situation, but if that situation never arises, neither will the behavior. There are several aspects of access:

Direct control. This could include direct social control through supervision or the physical presence of other adults at all times, such as the "chaperone." It could also involve curfews, the requirement to limit the places one frequents or the time one arrives home, or access to the family automobile.

Indirect limitation. Since sexual activity is intrinsically rewarding for most youth most of the time, it is important to consider what other activities are available that provide alternative rewards to youth at risk. For example, sports, academics, music, clubs and organizations all provide alternative sources of rewards during adolescence. Grades in school are one indicator of rewards in academic pursuits, for example.

What sorts of factors might limit access to alternatives? Direct physical control is mentioned above. However, other factors, biological, economic and social, might limit access to alternatives.

Certain groups have limited access to certain resources, for example, low income families may not own an automobile. Lack of employment opportunities may be a limitation, as may a mental or physical handicap. Some authors (e.g., Chilman, 1983) also point to racism, sexism and ethnocentrism as factors limiting alternatives.

Individual opportunities for sexual intercourse may be limited indirectly as well. Degree of physical attractiveness or social maturity may limit the ability of a youth to attract a potential partner. Finally, the type of community in which a youth lives and the social groups in which he/she participates may affect opportunities for sexual involvement.

RESEARCH RESULTS

While the discussion of research results closely follows the model in Figure 1, the data presented do not cover all relationships shown in that model. In fact, the presentation and most research examined focuses on the relationship of each set of factors to sexual behavior, not to the intermediate sets of factors.

Biological Factors

There are substantial disagreements in the literature over the influence of many of the factors described above. Yet, there is almost universal agreement in the studies reviewed that early pubertal development (e.g., age at menarche for girls, level of pubertal development for boys) is associated with early initiation of sexual activity. This finding appears to hold net of other factors and also appears to hold using various measures of sexual activity, from masturbation to intercourse, including the frequency of such activity (Westney et al., 1983; Morris et al., 1982; Billy and Udry, 1985a; Udry, 1979; Zelnik et al., 1980).

There are two possible explanations for the association between level of pubertal development and sexual activity, particularly intercourse. The first is a strictly biological one. That is, the increase in hormonal levels at puberty cause increased sexual motivation and sex "drive." This increased motivation leads to an increase in sexual activity. A second explanation is a social one. The development of secondary sex characteristics at puberty (breast development, hair growth, etc), act as a signal that the individual has matured and is "ready" for sexual activity. In other words, pubertal development leads to sexual activity through its social interpretation, i.e. physical attractiveness to the opposite sex. Most research has been unable to distinguish between these two explanations of the association between pubertal development and sexual activity because the only measures of puberty were ratings of secondary sex characteristics (e.g., Tanner Scale) or, even more

crudely, age at menarche or age at "first wet dream." Unfortunately, the timing of such events relative to hormonal levels is not known precisely. Nor is the relationship between hormonal levels and sexual motivation known.

A recent study obtained information on pubertal development, sexual motivation, and sexual behavior in questionnaires obtained from 102 white boys in ninth and tenth grades in selected schools in a southern city. In addition, serum samples were obtained and analyzed for a variety of serum androgenic hormones. Among these boys, hormonal levels appeared to explain the most variance in a variety of sexual behaviors, compared to other factors. In a model of sexual intercourse and masturbation for white males which included age, pubertal development (Tanner Scale) and level of serum androgenic hormones, only the hormonal influences (particularly free testosterone) retained their effects while the other effects were reduced to zero (Udry et al., 1985). This study provides strong evidence for the hormonal basis of sexual motivation and behavior in adolescent males.

A comparable study was conducted on eighth, ninth and tenth grade females (Udry et al., 1986). Hormonal levels have weak effects on sexual behavior, but stronger effects on motivation. That is, girls with higher hormonal levels showed increased interest in sex, but did not show increased sexual activity. Female sex interest is affected by the same types of hormones that affect male sex interest. As with males, hormonal levels appear to affect motivation directly. In a model including age, pubertal development and hormonal levels, only the hormonal influences retained their effects on certain aspects of sexual behavior and on sexual motivation. The fact that sexual motivation is not reflected in females' behavior to the extent that it is among males suggested that the actual behavior of females is influenced to a greater extent than that of males by their social environment.

There are no comparable data for black males and females. Early work suggested that the association between pubertal development and sexual behavior was stronger for white than for black girls (Zelnik et al., 1980) and for white boys compared to black boys (Morris et al., 1982; Billy and Udry, 1985a). Age at first intercourse is lower for black males and females. Thus to study early sexual activity among blacks requires an even younger sample than one of junior high school students. In fact, a large portion of black males seem to initiate intercourse prior to puberty (Westney et al., 1983; Zabin, 1983). This suggests a much larger influence of social environment for black males than for white males.

Finally, even though there is a strong relationship between pubertal development, hormonal levels and sexual activity, the type of activity is very strongly socially determined. For females, sexual motivation does not necessarily translate into sexual activity. Not all males with high hormonal levels engage in sexual intercourse.

Social factors do intervene in determining when and how males and females initiate sexual intercourse, given maturation. The way social factors mediate maturational factors becomes a very important question for males and females.

Social Influences

Culture/Subculture

International differences. One underresearched area is that of international differences in the initiation of sexual intercourse. The major reason for lack of research is the lack of data in other countries on sexual activity and age at first intercourse. Two studies have focused on the fertility of teenagers in developed nations. Westoff et al. (1983) found substantial differences across developed nations in levels of childbearing among teenagers. A recent study (Jones et al., 1985) examined data for five countries (Canada, England and Wales, France, Netherlands and Sweden and found that at similar ages rates of sexual intercourse, among women are somewhat higher in Sweden than in the United States, quite similar in France, the Netherlands, England and Wales, and among older Canadians, but slightly lower among Canadian women in their early teens. To fully explain the range of differences in teen fertility, differences in sexual activity are crucial to ascertain. At the present time it is not possible to study the initiation of sexual activity in more than a handful of nations across even the developed countries. The chance of obtaining estimates of sexual activity for developing countries is even smaller. Information on age at initiation of sexual intercourse was not included in the World Fertility Survey, for example.

Regional differences (U.S.). The data show that, net of other factors, few regional diffferences in the probability of sexual activity are found. One study found black women 15 to 19 living in the south were more likely to have had intercourse than those living in other regions (Devaney and Hubley, 1981), but this does not appear to be replicated in other studies. The most important regional dimension is urban-rural. However, the direction of the effect is not always clear. Although several studies have shown those living in metropolitan areas to be much more likely to say they have had sexual intercourse, compared to those living in non-metropolitan areas or on a farm (Devaney and Hubley, 1981), more recent studies do not find this to be significantly associated with ever having had intercourse (Mott, 1984). In fact, one recent analysis of nationally representative data collected by Kantner and Zelnik in 1976 (Billy, 1984) found that once a number of factors relating to sexual activity were controlled, young women in larger communities were less likely to report having experienced intercourse than those in smaller communities. Until it is better understood what urban-rural or community size represent, the relationship between this dimension and sexual intercourse among teens will remain ambiguous.

Other community characteristics. Characteristics of communities other than size have been shown to be related to the probability of initiating sexual intercourse as a teenager. Hogan and Kitagawa (1985) found that black females age 15 to 19 living in a poverty area of Chicago had a much higher rate of initial sexual intercourse than peers not living in a poverty area. Besides community size (discussed above), Billy found that for both black and white females, the higher the percent in a community who voted for McGovern in 1972 the higher the likelihood of being sexually experienced. For white females, the greater the religiosity of the community, the lower the divorce rate and the lower the proportion of the civilian labor force female the lower the proportion sexually experienced. For black females, the greater the proportion of Spanish heritage, the younger the age of the community and the lower the crime rate the lower the proportion reporting sexual experience. Billy's analysis suggests that these variables affect adolescent sexual behavior via the normative structure (that is, they affect the specific attitudes and behaviors of youth) as well as via the opportunity structures in the community. The specific mechanisms will be discussed in more detail in a later section.

Religion. Religion is an important differentiator of early versus later initiators of sexual intercourse. However, the influence of religion appears to be due to the strength of religious beliefs and their practice rather than affiliation with a particular religious denomination. For example, several studies found that, controlling for a number of other factors, young women 15 to 19 who said religion was important to them and who attended church more frequently were less likely to have reported having had sexual intercourse (Devaney and Hubley, 1981: Zelnik et al., 1981, Mott, 1984). In contrast, there was no difference between reporting a "Catholic" religious affiliation and reporting other affiliations (Devaney and Hubley, 1981). Reporting no affiliation was associated with a higher probability of initiating intercourse early (Mott, 1984). Unfortunately, in most of these studies religiosity is measured at the survey date; it may follow or be a consequence of rather than precede early sex. However given the number of studies of teenagers that show the restraining effects of religiosity on sexual activity (Inazu and Fox, 1980; Zelnik et al., 1981; Devaney and Hubley, 1981; Cvetkovich and Grote, 1980; Herold, 1980; Mott, 1984; Jessor and Jessor, 1975, 1983) it appears to be a reliable finding.

In recent years a newly revived Protestant fundamentalism has gained a reputation for promoting very strong and often controversal, but always conservative stands on moral issues. Thus Catholicism may no longer be a good indicator of a conservative religious affiliation. In fact, one study of sexual activity among teenagers (Thornton and Camburn, 1983) found that adherents of fundamentalist Protestant denominations were significantly less likely to report having had sexual intercourse, compared to those affiliated with other denominations.

Race. One of the most important factors differentiating early from later initiators of sexual activity is race. There are large black-white differences in levels of sexual activity in the crude data, and these differences do not diminish when controls for other factors including poverty status are introduced (Zelnik et al., 1981; Devaney and Hubley, 1981; Zelnik and Kantner, 1980; Inazu and Fox, 1980; Mott, 1983; Furstenberg et al., 1985). At each age blacks are much more likely to be sexually active than whites; this holds for males as well as females (Zelnik and Kantner, 1980).

So far no explanation for these black-white differences has been successfully supported by the data. One explanation, for example, has been that black females mature sexually at an earlier age than whites (MacMahon, 1973), and early menarche is associated with early sex. However, even controlling for early age at menarche, black-white differences remain (Devaney and Hubley, 1981). Thus it may be that the racial difference is evidence for the impact of subcultural differences in attitude and value. However, most studies are unable to test for the effects of differential values and attitudes, since the point at which attitudes and values are measured may be after first intercourse, and sexual experience may have already affected their attitudes. If the difference is cultural, it is unclear in what way.

One interesting hypothesis that has been advanced involves different environments. Even middle class blacks, because of past histories of residential segregation, live in neighborhoods that are substantially poorer than their white counterparts, and their children are subjected to different pressures than white peers (St. John and Grasmick, 1982). Evidence for the importance of neighborhood was cited earlier (Hogan and Kitagawa). The chances that a young black woman living in a poverty area of Chicago would have had sexual intercourse was twice as high as that of a young black woman living elsewhere in the city. It may also be true that it is hard even within SES groupings to find comparable samples of blacks and whites.

There is evidence of some important differences in attitudes between blacks and whites. Blacks appear to be more sexually permissive than whites (i.e., greater tolerance for sexual activity outside a marital relationship), they rate marriage as less important than whites; they perceive a greater tolerance in their neighborhood for an out-of-wedlock birth (Moore et al., 1986: Chapter 7). Several studies (Moore et al., 1986; Clark, Zabin and Hardy, 1984) show that black teens also indicate a preference for a younger age at first birth than age at first marriage. Whites report just the opposite; they prefer an age at first marriage younger than age at first birth (Moore et al., 1986: Chapter 7). Moore et al. point out that although such attitudes do not cause teen pregnancy, they do not discourage it either. However, such attitudes may simply be a result of the prevalence of teen pregnancy in the black community, rather than a cause of it. One interesting, though dated, study, shows that in

elementary school black boys and girls have attitudes similar to those of whites about marriage; however, these attitudes become less positive as time goes by; other race-sex groups do not show this decline (Broderick, 1966).

In conclusion, the research on black-white differences continues to show strong black-white differences in sexual intercourse at young ages, even controlling for differences in socioeconomic status. Questions have been raised as to the adequacy of these controls, given the the substantially unequal distribution of socioeconomic status by race and racial inequality even within categories of SES. However, research has consistently found race differences which so far have not been explained by socioeconomic characteristics of the groups. These race differences should be taken seriously and more effort paid to explaining them. Finally, research has not studied the initiation of sexual activity early enough to capture the transition for the majority of black males and a large proportion of black females. Of what prepubertal sexual activity consists and what it means is an important and still very much open question.

Ethnicity. Although ethnicity is an important dimension, little research has been conducted on the experience of ethnic subgroups. Hispanics are a particularly important subgroup on which data have only recently become available. Table 1.4 provides national estimates of the proportion of Hispanic teens sexually active in 1983. Note that Hispanic teens are apparently more likely than whites but less likely than blacks to be sexually active at each age. However, Hispanic teens are also more likely to be married than either white or black teens. In 1982 12 percent of Hispanic versus 6 and 3 percent of non-Hispanic white and non-Hispanic black teens were currently married, and 20 percent of Hispanic versus 8 percent of non-Hispanic white and 4 percent of non-Hispanic black teens had ever been married.

Thus a larger part of the sexual activity among Hispanic teens than non-Hispanic is postmarital. Comparing never married teens only, Hispanic teen women are least likely to be sexually active--37 percent, compared with 39 percent of non-Hispanic white (and other) teens and 57 percent of non-Hispanic black teens (Torres and Singh, 1986). Although this descriptive information is helpful, a rigorous comparison of the factors affecting first intercourse among Hispanic males and females, comparable to non-Hispanic whites and blacks, needs to be conducted.

Schools. A recent analysis of the National Survey of Children (Furstenberg et al., 1985) attempted to explain black-white differences in the probability of intercourse by age 15 or 16. Blacks were 4 times as likely as whites to initiate sex by age 15 or 16. The only factor that reduced the race difference in the initiation of sex was whether the respondent attended a segregated school. Blacks who attended a segregated school (over 90 percent black) were 13 times as likely as whites in segregated schools (100 percent white) to have had sex by

age 15-16. In contrast, blacks in integrated schools (less than 90 percent black) were only 2.5 times as likely to have sex as whites in integrated schools (less than 100 percent white). "The behavior of black and white students, then is more similar when they are not isolated from one another" (Furstenberg et al., 1985: p. 12).

The authors believe that the effect of the school is a normative one which works through peer influence. The authors found a strong association between attending a segregated school and the number of friends the respondent reported had had sexual intercourse and between the number of friends reported to have had sexual intercourse and whether the respondent had intercourse. Blacks in segregated schools were more likely and whites less likely to have had sex. However, the timing of the question is such that the authors couldn't be certain that peers actually influenced the respondent's behavior (see Peer Group discussion, below).

The media. Children watch a lot television, and early adolescents apparently watch the most. One study showed that viewing increases with age to an average of 4 hours a day at age 12 (Comstock et al., 1978). Another study showed that 11-12 year old boys, the heaviest viewers, watch an average of 26 hours per week (Timmer et al., 1985). Content analyses of television have shown an increase in the frequency of sexual references on television during the mid to late 1970s (Orr, 1984). It was during this same period that the US experienced a major increase in sexual activity among teenagers. Was television a causal factor, or does it just reflect changes in the broader society? Because of its broad and ubiquitous reach, it would seem important to know what effects the content and hours of television viewing might have on children. Unfortunately, it is its broad reach that also makes such research difficult to conduct.

Most research has focused on the effects of the portrayal of violence on television on aggression and violence in children. Very little research has focused on the relationship between sexual content in television programming and the early initiation of sexual activity among young teenagers. The major problems with conducting this research are two: first, to obtain some idea whether television affects behavior, a researcher would have to have information on viewing and sexual behavior at two time points to be able to infer whether viewing at the early time point resulted in a change in behavior between the two time points. An association between viewing behavior and sexual behavior at one time point alone could indicate that those who are sexually active become more interested in programs with more sexual content, rather than the other way around. Second, assuming even that two time points are available, a more serious problem with attributing any change to television is that of demonstrating a change in television programming or viewing habits strong enough to cause a change in behavior. That is, children have been watching television with sexual content for a substantial number of years before becoming sexually active. Why all of a sudden would

watching the same types of programs cause teens to become sexually active? On the other hand, if there were a change of programming or a change of viewing habits there might be cause for a change of behavior. This would necessitate substantial long term documentation of viewing habits, a very difficult research problem. Television's broad reach makes rigorous scientific reseach as to its effects both important and extremely problemmatic.

There have been several studies that have found associations between virgin and non-virgin status and amount of viewing of television with high sexual content (Roberts, 1982; Greenberg, 1981; Newcomer and Brown, 1984). Unfortunately, no causal connection can be inferred from these studies. There is one study so far with data on television viewing at two points in time and information on sexual experience. This study is based on an analysis of the National Survey of Children, who were interviewed in 1976 when they were 7-11 and again in 1981 when they were 11-16.

The authors found a weak association between amount of television viewed in 1976 and whether sexually experienced in 1982 for boys, but not girls. Heavy viewers were most likely to be experienced, but moderate, not light viewers were least experienced. For boys, there is a strong positive correlation between viewing time and sexual experience among those who view teleivision apart from their parents. For this group of boys, the experience rate for the heaviest viewers is nearly six times that of the lightest viewers. For those who view with their parents, greater television viewing is associated with much lower level of sexual experience. However, the authors conclude that they find no strong or consistent evidence for a link between the quantity and content of television viewing and the initiation of sexual activity. The authors had no information on program content in 1976. In addition, the measure of sexual activity was very restricted, and the sample sizes were small. However, the interesting male-female differences are consistent with important sex differences found in other studies and more research is needed.

Time Period/Historical Context

Teenage and premarital sexual activity are not new, of course. Table 1.5 presents data gathered from a variety of different studies on the reported premarital adolescent sexual experience of early cohorts of American youth. One study (Udry et al., 1975) reported that although there were gradual increases in sexual experience over the last century, the largest increase in experience between decade of birth cohorts occurred between those born in the 1940s and those born in the 1950s, that is, the cohort who entered their teen years in the late 1960s and early 1970s. The substantial increase during the 1970s is well documented. According to the major study of sexual activity over that decade (Zelnik et al., 1981), the proportion of U.S. metropolitan area women age 15-19 who said they had ever had intercourse

before marriage rose by two-thirds between 1971 and 1979--from 30 to 50 percent. The increase was greater for whites than blacks, from 26 percent in 1971 to 38 percent in 1976 and 47 percent in 1979, an increase of 82 percent. The proportion of blacks sexually experienced increased 23 percent from 54 percent in 1971 to 66 percent in 1976 with no increase between 1976 and 1979 (Table 1.2). Data from the 1982 National Survey of Family Growth (Pratt and Hendershot, 1984; Pratt et al., 1984) show that the proportion of young women in metropolitan areas who reported they had ever had intercourse before marriage appeared to level off between 1979 and 1982 for whites: 40 percent of never married white U.S. metropolitan teen females reported having had intercourse in 1982, according to the National Survey of Family Growth (Table 1.2). In contrast, the proportion who reported having had sexual intercourse had leveled off for black women between 1976 and 1979; between 1979 and 1982 the proportion of black never married teens in metropolitan areas who reported that they had experienced their sexual debut declined slightly to 53 percent (Table 1.2). The difference between the sexual experience of white and black females appears to have declined slightly over time.

Unfortunately, national trend data for teen males 15 to 19 are limited. Date from small scale studies (Table 1.5) suggest little increase among males between 1950 and 1979. In the Johns Hopkins study of 1979, 56 percent of 17, 66 percent of 18 and 77 percent of 19 year old males reported that they had had premarital intercourse. Data from the 1983 National Longitudinal Survey of Youth (NLSY) (Table 1.4) suggest that some increase in the sexual activity of black but not white adolescent males occurred between 1979 and 1982. Since levels have historically been higher for comparably aged males than for females, the changes during the 1970s were apparently greater for young women. The difference in sexual experience between men and women has certainly declined and a number of studies suggest that it may disappear or even reverse as the double standard declines (see, for example, Lewin, 1982; Jessor and Jessor, 1975). Recent leveling off among females with continued increase among black males suggest that a continued decline in the difference in sexual activity between teen men and women has not occurred in the U.S.

The causes of the increase in sexual activity in the 1970s and the apparent stability in the early 1980s have not been explored empirically. Instead, it has been explained by the "sexual revolution", one part of the larger social revolution of the late 1960s and early 1970s which was characterized by increasingly permissive attitudes toward sexual activity by individuals of all ages, and the increasing emphasis on personal fulfillment, individual growth, honesty and equity (see Chilman, 1983, for a discussion of some of the the broader social environment in which these changes took place). One development appears important. The decade was characterized by a trend toward later marriage (Table 5.1). It may have been unrealistic to expect most young people to abstain from coitus entirely until marriage. Recent data from Tanfer (1983) indicate that 82 percent of unmarried

20 to 29 year olds say they had had coitus. The behavior of unmarried teenagers is not inconsistent with that of their older, unmarried counterparts.

Two important additional developments often implicated in changes varying from increased divorce to declining religiosity are the development and widespread use of the contraceptive pill and the increased employment of women outside the home. There is no direct empirical evidence on the association of increased teen sexual activity with any of these broader societal changes.

The increase in sexual activity among unmarried teen females that occurred during the 1970s appears to have slowed. However, this does not mean that problems associated with it will disappear. Although the probability of initiating intercourse as a teen has declined somewhat, it has not declined as fast for younger teens, and it may still be increasing for the very youngest teens. Thus the problems associated with early sexual activity have not lessened much for the very youngest teenagers. These teens are at very high risk for a number of health problems for themselves and for their babies.

What are the reasons for the decline in rate of increase in sexual activity? Methodological differences between the surveys, which were conducted by different organizations at different times and in different ways, do not appear to explain the leveling off in sexual activity. Different sources of data provide slightly but not statistically different estimates of the level of sexual activity over the past decade, and the trend estimates are similar. Curent efforts are focused on developing better estimates of these levels and trends using data from multiple surveys.

There are several other possible explanations which have been proposed but not researched: 1) First, there has been a decline in the number of teenagers. This reduces somewhat the relative size of the teenage group relative to older age groups, which are generally more conservative in sexual matters. 2) Second, there has been a revival of religious fundamentalism. Religiosity is one of the most important influences on individual sexual activity; the more religious delay beginning sexual activity to older ages than the less religious. By religiosity is meant not religious affiliation but intensify of religious belief. 3) Third, no one ever expected sexual activity among unmarried teens to reach 100 percent. It does not do that anywhere. In 1982 78 percent of unmarried black 19 year old females reported that they had had sexual intercourse. Perhaps sexual activity rates have simply reached a higher plateau. 4) Fourth, for years social scientists have pointed to the negative effects of young age at marriage; in fact, age at marriage is increasing and fewer teens marry. The past five years have seen a blitz of information on the risks of early sexual involvement and campaigns to slow or delay entrance into sexual activity. Perhaps they are now paying off. 5) Finally, fear of disease may have reduced early sexual experimentation among young women.

Family

One of the most important characteristics of the family is its location in the structure of society as a whole. Social class membership or socioeconomic status of the parental family will be discussed here. (In the U.S., race is often an indicator of socioeconomic status since much higher proportions of blacks than whites are poor. Indeed, SES may account for some of the racial differences discussed above.)

One of the most important indicators of socioeconomic status, also one of the most stable, is education of the parents. A number of studies have shown that the higher the education of the parents, the lower the proportion sexually active at a given age (Zelnik et al., 1980; Thornton and Camburn, 1983; Moore et al., 1984; Mott, 1983, 1984). This appears to hold for both mothers and fathers (Zelnik et al., 1980). Only two studies failed to find such a relationship: Hogan and Kitagawa (1985) found no relationship between the education of the mother and whether her daughter had initiated sexual intercourse. These researchers, who studied black females in Chicago, controlled for being in a poverty area of the city, which might explain why mother's education had no additional effect. Devaney and Hubley (1981) did not find a significant relationship; however, they controlled for educational expectations. Presumably educational expectations explain the relationship between the education of the mother and sexual activity of the daughter. This will be discussed with other intervening processes later in the chapter.

Another measure of family status or class is family income. Net of other factors such as race, parental education, family structure, religion, and urban residence, there appears to be no relationship between income and sexual experience (Inazu and Fox, 1980; Devaney and Hubley, 1980; Moore et al., 1984).

A measure of parental occupational status might be a better proxy for socioeconomic status in some situations. However, there is very little agreement on the best way to measure occupation. This is particularly a problem for women who are not employed outside the home. There is likely to be even less agreement on the meaning of an effect of occupational status than of an effect of the education of parents on daughter's sexual debut.

Another important characteristic of the family is the mother's age at first sexual experience, operationalized by mother's sexual experience as a teenager, age at first birth or age at first marriage. Several studies have found a relationship between the mother's age at first birth and daughter's age at first birth (Presser, 1976) such that the earlier the mother's first birth the earlier the daughter's experience.

Recent research (Newcomer and Udry, 1984) shows a strong relationship between the mother's sexual experience as a teenager and the

daughter's sexual behavior as a teenager. Since mother's sexual activity could not have been modelled by the daughter, there is a substantial question as to what this relationship means. Is the association due to a biological relationship between the sexual maturation of mother and that of daughter (as argued by Newcomer and Udry, 1984) or to intervening attitudes, values, and, perhaps, to common experiences such as socioeconomic status level (Presser, 1976)? Inazu and Fox (1980) found that although there was a simple correlation between whether the mother had had a premarital pregnancy and whether or not the daughter was sexually active, this relationship disappeared when other factors such as race, age, family structure, religiosity, and quality of the mother-daughter relationship were controlled (Fox, 1980b).

This leads into a central issue, and that is the impact of family structure and composition on initiation of sexual activity by a teenager. Several studies have found that girls in non-intact or female-headed families are more likely than those in intact or male-headed families to initiate sexual activity early (Zelnik et al., 1980; Newcomer and Udry, 1983; Moore et al., 1984; Inazu and Fox, 1980). However, the mechanism by which non-intactness affects daughters' sexual activity is not known. Divorce may result in a stressful situation for the daughter and she may initiate sexual activity as a result (see, for example, McLanahan, 1983). Change in marital status does not appear to precipitate girls' initiation of sexual activity; however, girls who had lived continuously with only their mother were more likely to initiate sexual activity (Newcomer and Udry, 1983). An alternative explanation is that divorced or separated mothers engage in sex outside of marriage and this is observed by their daughters. For example, Inazu and Fox 1980) found that daughters whose mothers had cohabited during their lifetime were more likely to have initiated sexual intercourse early. Moore et al. (1984) found among white single mothers but not blacks that daughters of dating and remarried mothers (who presumably had been dating) were more likely to be sexually experienced. A third possible explanation is that of changing supervision, or a changed relationship with parents. If a mother goes to work after divorce, her opportunity to supervise her children may decline. In addition, the new burdens of employment plus the stresses and strains of divorce may weaken the relationship between mother and daughter. Inazu and Fox (1980) and Moore et al. (1984) found that girls with a close relationship to their mother were less likely to be sexually active. Supervision will be discussed later on.

The results differ for boys. One study found that for white males sexual experience was more common among sons residing with their biological or adoptive father than with just the mother or with a mother and stepfather (Moore et al., 1984). Sample sizes were small in this study, however. Another study found that, in contrast to the results for girls, boys were more likely to inititate sexual intercourse following a change in maternal marital status (Newcomer and Udry, 1983).

Family composition, in particular, the number and ages of children, and the presence of other family members (adults and their children), is an important characteristic of families. Different numbers of children create different stresses and strains and could be expected to affect daughters differently from sons. The mechanism may be differential supervision, or closeness. An alternative mechanism may be simply modeling. The more sibs the more likely there will be an older sib who is premaritally sexually active, and this may serve as a model for younger sibs. For example, among black teen females, Hogan and Kitagawa (1985) found that, controlling for other factors such as socioeconomic status, daughters in very large families (more than 5 children) were more likely than those in smaller families (0 to 5 children) to initiate sexual activity early. The same researchers also found that having a sister who is a teenager mother was associated with a significantly higher rate of initial sexual intercourse among black females 13 to 19 in 1979 (Hogan and Kitagawa, 1985). This result is supported by a recent study which found that teenagers with pregnant sisters are themselves at increased risk of pregnancy (Friede et al., 1985).

There is some evidence that the closeness of the mother-daughter relationship is associated with sexual activity. Inazu and Fox (1980) found that the less close the relationship between mother and daughter as reported by the daughter, the less likely the latter is to be sexually active. However, since adolescence is a time of testing one's independence and gradually growing away from parents, it is also possible that the decline in the mother-daughter relationship follows the initiation of sexual activity, rather than preceding or causing it. Alternatively, both decline in closeness and initiation of sexual intercourse could be caused by similar factors--increased independence. Jessor et al. (1983) and Mott (1983) have found a number of indicators of independence/ adulthood such as drug, cigarette and alcohol use to be associated with each other and with early sexual activity among teenagers.

Substantial research has been conducted on the parent-child relationship and on parent-child communication as it relates to initiation of sexual activity. Communication has an ambiguous relationship with initiation of sexual activity (Newcomer, 1983). Although there is some evidence that a close mother-child relationship may be associated with less sexual activity at an early age (Inazu and Fox, 1980) there is also evidence that 1) less mother-daughter or mother-son communication takes place than commonly assumed, 2) that such communication may not be heard by the child, and 3) that communication often takes place after initiation of sexual activity rather than before (Newcomer and Udry, 1983; Inazu and Fox, 1980, Fox and Inazu, 1980). Thus communication may be associated with a higher degree of sexual activity rather than a lower degree. Many studies are unable to disentangle the relationship because they do not have measures of communication prior to initiation of sexual activity.

A recent study (Kahn et al., 1984) that was able to distinguish between communication prior to and following sexual debut found no relationship between the frequency of communication about sexual topics (prior to debut) with the mother or father and the sexual activity of the daughter. For boys, communication with the mother was found to be associated with less subsequent sexual activity. However, communication (for boys) with the father was associated with greater sexual activity. It is clear that the content of the communication about sexual topics differs substantially between fathers and mothers, for sons at least. What is communicated is at least as important as how much communication takes place, but has not been studied. It is likely that the father implicitly if not explicitly condones premarital sexual experimentation among sons, without the emphasis on responsibility and concern with the partner that the mother communicates (Kahn et al., 1984).

Peer Group

Probably the agent most "blamed" for increases in teen sexual activity over the last decade has been the peer group. However, substantive research on peer influence in the initiation of sexual activity has not been strong. As a result peer influence may have been heavily overrated as a source of increased sexual activity among teenagers, particularly among blacks and among white males (Chilman, 1983; Billy and Udry, 1985b,c). Although researchers have consistently found associations between the attitudes and behaviors of friends, the following types of problems have characterized the research: First, the same individual reports on his own and his/her perceptions of friends' attitudes and behavior without independent validation of friends' attitudes and behaviors. One study (Newcomer at al, 1980) found a high correlation between the individual's own behavior and the perceived behavior of the best same sex friend, and between the individual's own attitudes and the perceived attitudes of the best same sex friend, both for males and females. However, among females they found no relationship between the individual's own behavior and the actual behavior or attitudes of same sex best friend. For males, the individual's behavior is weakly associated with the actual behavior of same sex best friend, but not at all with actual friend attitudes. Although there is an association between perceived friend behavior and actual friend behavior for males and females, it is not very strong: .27 for girls and .48 for boys. It is stronger for boys than for girls, which explains the association for boys between behavior of best friends. There is no association at all between perceived attitudes of same sex best friend and actual friend attitude for males and females alike. In fact, the authors found that in most cases the responses of randomly paired "friends" were associated as highly as those of actual friends. The authors concluded that individual behavior and attitudes appear related more to what teenagers think their friends do and believe than what their friends actually do and believe. Of most concern is that these perceptions appear to be inaccurate.

A second problem with the data on peer behavior is that the data are gathered at one point in time; as a result it is not possible to conclude that the characteristics of friends at one point in time had an effect on behavior/attitudes between that point and a later time point. Although influence may operate, an alternative hypothesis is that of selection: individuals select friends who are similar to them and discard friends who are different from them. Another alternative would be that other factors determine both the selection of friends and the types of sexual behaviors of adolescents. Of course, the fact that adolescents pick friends on the basis on their sexual activity means that they are affected by the behavior of friends; however, it affects their friendship behaviors, not their sexual behaviors.

Recent research has attempted to better test the influence hypotheses through longitudinal studies in selected schools. In these schools students, who fill out questionnaires, identify friends by a code. Since all adolescents in these schools are surveyed, information is available on these friends from the questionnaires they themselves fill out. Finally, data are collected at several time points so that influences can be examined over time. Using this technique, Billy and Udry (1985b,c) found evidence that the sexual behavior of white girls is influenced by the behavior of their best male and female friends; that is, those who were virgins at the first time point were more likely to experience intercourse between waves of the survey if they had sexually experienced friends at the first wave than if they didn't. In contrast, white males appear to pick their friends on the basis of sexual activity rather than be influenced by friends' behavior. Blacks appear to neither be influenced by friends' sexual behavior nor to pick their friends on that basis (Billy and Udry, 1985b, c; Billy et al., 1984).

Davies and Kandel (1981) studied the association between the aspirations and the respondent's best friend (as reported by the friend) and the respondent's own educational aspirations in a multivariate causal model. While the association was signifficant for both sexes, it was two to three times larger for girls than for boys. The authors concluded that peer influences on educational aspirations are stronger for girls than for boys. Although the focus of this study is not sexual activity, the differences in peer influences are strinking. They confirm previous evidence from bio-behavioral studies showing major sex differences in the process of becoming sexually active.

Another study (Lewis and Lewis, 1984) shows that children are often challenged by "dares" from peers to engage in risk-taking behavior, and about one-third of older children actually did what they were dared to do. Among 7th and 8th graders, boys were dared to perform acts of vandalism or violence while girls were dared to engage in various sexual acts, ranging from a kiss to sexual intercourse.

So far the discussion has been primarily about friends of the same sex. What about friends of the opposite sex and dating? Work by Billy

and Udry (1985b) shows that best male friends do influence females' sexual activity. However, the authors were not able to determine whether that friend was, in fact, a sexual partner of the female. In contrast to this recent work, much early research focused on sex and dating. Not surprisingly, age at first date and at first sexual intercourse are associated. Data from the National Survey of Young Women found that sexual activity is strongly connected to the dating relationship (Tables 1.9 and 1.10). However, as pointed out in recent work (e.g., Udry et al., 1985), dating is an age-graded behavior. Nearly all youth in one study reported "having gone out with girls", regardless of hormonal levels or levels of sexual activity. Other research shows little relationship between pubertal development and dating (Dornbusch et al., 1981; Presser, 1978). In addition, a substantial amount of sexual intercourse occurs outside the dating relationship. About half of males 17 to 21 reported that they had experienced first sexual intercourse with a friend or a casual acquaintance, outside what they perceived to be a dating relationship (Table 1.9). In their study of low income blacks in Baltimore, Zabin et al. (1983) found that a large proportion of black males--61 percent--and a somewhat smaller proportion of black females-- 13 percent--reported having first had intercourse before puberty. The meaning of such behavior is unclear. Among blacks, in contrast to whites, there appears to be no Guttman scale of sexual behavior, that is, with youth progressing gradually from less to more intimate activities. Sexual intercourse occurs early in the sequence. It is followed by petting and other sexual behaviors earlier in the scale for whites (Smith and Udry, 1985).

A common belief is that one reason some girls become sexually active is that they can't say no to a boyfriend. Although some research has found this to be true for girls (Cvetkovich and Grote, 1980), it also appears to be true for some boys--each may be trying to please the other (Cvetkovich and Grote, 1980). Another study (Herold, 1980) found that a major reason some women had not yet become sexually active was that they hadn't found the right person or that the opportunity hadn't arisen. It was not beliefs that delayed sexual debut (although religious persons were less likely to initiate sex) as much as alternatives and opportunities that affected when young women became sexually active (Herold, 1980). The differences in religiosity between persons who had not yet had sex, but would and those who were non-virgins were relatively small. "Adamant virgins" were different (they had stronger moral beliefs against sexual intercourse outside of marriage)(Herold, 1980).

Intervening Factors: Relationship Between Attitudes/Values and Sexual Behavior

This section focuses on the Outcomes part of Figure 1, in particular the association between characteristics of the child (personality, attitudes, values, "tastes," IQ) and sexual behavior. The

major question is what characteristics distinguish adolescents who initiate sexual intercourse at an early age and those who don't? Although some of the earliest work on adolescents was framed in terms of characteristics of adolescents associated with early parenting, this approach has not proven very fruitful. The association between psychological characteristics and early parenting is attenuated because of the multiple "decision points" at which the connection between sexual activity and parenting can be interrupted: contraception can be used, a pregnancy can be aborted, and, finally, a child can be given up for adoption. Thus associations were weak and the interpretation of such associations were unclear. It is only relatively recently that researchers have had available the information necessary to examine each of the "decision points" in turn. As a result, there are relatively few studies of psychological factors associated with early sexual activity. Two major studies in this area are those of Jessor et al. (1983) and Cvetkovich and Grote (1980).

Cvetkovich and Grote (1980) proposed a set of psychological traits and attitudes, hypothesized that they might be related to early initiation of sexual activity (and to effective contraception) and tested them in a study of white teen males and females in a small Northwest U.S. community. These researchers found for both males and females, white and non-white, that those who are sexually experienced not only are more sexually liberal, but are more likely to accept traditional family sex roles--that is, they are "liberal but not liberated" (Cvetkovich and Grote, 1980). Those sexually experienced are less likely to see religion as important (all females, white males), and are more likely to report inconsistent rule enforcement by mothers (white females), and to desire strongly to please the partner (females). The sexually experienced also see their friends as sexually liberal (white males and females). Thus the factors that were found to be related to early initiation of sexual activity appear to be attitudes and values related to the family and sexuality, the perceived attitudes and values of friends, parental control as reported by the child, and desire for companionship. Unfortunately, these researchers did not have data available both before and after the transition to intercourse.

A study by Jessor et al. is one of the few to be able to be able to examine youth before and after first intercourse. Jessor et al. (1983) examined the factors associated with sexual debut among high school students in a small Rocky Mountain state community, tracked in high school and then a decade later. The researchers found several personality measures associated with early onset of sexual intercourse. In particular, men and women who placed a higher value on and expectation for independence and a lower value on and expectation for academic achievement, who were more socially critical, more tolerant of deviance and less religious experienced intercourse earlier than their peers. Those who perceived less compatibility between parents and friends, less parental influence relative to that of friends, and more social approval and models for problem behavior also experienced sexual debut

early relative to peers. Finally, those who experienced sexual intercourse earlier were already involved before that experience with other problem behaviors, such as smoking, drug and alcohol use, and less involved in conventional behavior such as attendance at church.

One of the most important factors in determining whether a young man or woman will initiate sexual intercourse at a young age or not is his/her level of intelligence and achievement. Mott (1984) found the higher a measure of intelligence (the Armed Forces Qualification Test) the lower the probability that a young woman would report having had sexual intercourse before age 17. The higher her expectations for schooling beyond high school the lower the probability that she would have sexual intercourse before age 17. An earlier analysis by Mott (1983) indicated that the results were similar for males 17 to 20--the higher the score on the AFQT and the higher the educational expectations, the lower the probability of having had intercourse in the last month. Other researchers who have found high educational expectations to be associated with a lower probability of initiating sexual intercourse early include Devaney and Hubley (1981), Hogan and Kitagawa, (1985), and Furstenberg (1976). In these studies, parental socioeconomic status was controlled.

One variable of interest in a number of studies is "self-esteem." "Self-esteem" does not appear to be related to the initiation of sexual intercourse (Mott, 1983; Cvetkovich and Grote, 1980).

One of the major problems with studies of the initiation of sexual activity is the uncertain direction of the relationship between attitudes or values and initiation of sexual activity. Since many researchers are not able to interview young men and women prior and then subsequent to initiating sexual activity, they cannot determine whether attitudes follow the initiation of sexual activity or cause it. This is impossible to disentangle without longitudinal data. As a result, very little is actually known about the attitudes and values of teenagers that are associated with beginning sex at an early age, although there is recent evidence (Jessor et al., 1983) that there are substantial attitudinal and value differences between early and later initiators prior to first intercourse.

Intervening Factors: Relationship between Social Context and Individual Beliefs and Attitudes

This section focuses on the process by which psychosocial agents identified on the right in Figure 1 affect outcomes, particularly the first box--child personality, attitudes, values, tastes and intelligence. The processes considered here are two: socialization and development. The focus will be on socialization for sexual activity and fertility. (For a more complete discussion, see Chilman, 1983).

Socialization

One of the earliest and most influential works in this area is the sociological model of sexuality developed by Gagnon and Simon (1973). This model posits an almost totally social definition of sexuality: sexuality is not developed except through a process of societal definition. The most important recent work in this area was conducted by Philliber (1980a, 1980b) in her model of population socialization, which includes socialization for sexual activity as well as for childbearing and childrearing. Philliber lays out the agents of socialization, the mechanisms, and some of the content of this socialization. Her focus was mainly on socialization for childbearing. Other researchers (Fox et al., 1982; Billy and Udry, 1983a; Thornton and Camburn, 1983) have elaborated on this type of framework in their analyses of the initiation of sexual activity. The same researchers (Fox, 1980a,b; Newcomer and Udry, 1984, 1985b) have explored the content of the mother-child interaction and its impact on the attitudes and behavior of the child. Billy and Udry (1985b,c) and Billy et al. (1984), in addition, have explored the relationship between the attitudes and behaviors of best friends and their influence on the individual's behavior.

In general, most of this research does show an impact of parental values, attitudes, and behavior on their children's attitudes and behavior; however, in many cases the children's attitudes and behaviors are more strongly related to their perceptions of parental attitudes and behaviors than to actual parental attitudes. These perceptions are, of course, filtered through the child's own perceptions and attitudes, and may have a very low relationship to actual parental attitudes and values. In some areas parental and child attitudes are very similar; in the area of sexual permissiveness and attitudes toward amount of independence children should have, these attitudes are very far apart (See Thornton and Camburn, 1983; Newcomer and Udry, 1984; Newcomer, 1985b; and discussion earlier in this chapter).

There is substantial literature suggesting that certain types of childrearing patterns--"authoritative" as opposed to "authoritarian" or "permissive" are associated with the development of autonomous and responsible children (Baumrind, 1984). This work has not yet been directly linked to teen sexual activity, however.

Billy (1984) hypothesized two mechanisms whereby community level factors affect adolescent sexual involvement: through a normative structure defining boundaries of permissable sexual behavior and 2) through an opportunity structure which is restrictive or permissive of sexual activity. He found evidence for the operation of both mechanisms. For white females, religiosity of the community, percent voting for McGovern, and percent of the labor force female appeared to affect sexual activity through individual attitudes and values. That is, the individual internalizes community norms, which affect her own

behavior. The direct negative effect of community size on intercourse is attributed to the effect of opportunity structure, which restricts the opportunity in small communities to engage in sexual intercourse.

Apparently, while for whites there was a substantial correspondence between community and individual attitudes and behavior, this was not the case for blacks. This lack of congruence may simply reflect their minority status, i.e., "community" values may be those of the white majority. The model for black females was less successful in explaining the impacts of community structure, primarily because individual attitudes and values were hard to identify and measure. For blacks, living in a politically liberal community (percent voting for McGovern) was not associated with liberal attitudes at the individual level, although it was associated with lower religiosity, less family stability and less organizational involvement, all of which increase the probability of premarital intercourse.

The data on which this research is based were collected in 1976, a period of rapid social change, and are now ten years old. Since the study is an interesting exploration of factors that explain the influence of psychosocial agents on sexual behavior, it should be replicated with more recent data.

Cognitive and Moral Development

Adolescents are said to have a higher level of cognitive development than children (Piaget, 1972). Yet compared to most adults, younger adolescents are said to rarely reason logically in cost-benefit terms. They are said to be particularly egocentric, present oriented, and to believe that they have a special immunity to danger, including unwanted pregnancies (Chilman, 1983). A number of theorists have explained early sexual activity and non-use of contraception by teens as irrational behavior due to their lower level of cognitive development. However, no studies have ever examined the costs and benefits of sexual activity for teens, so it would appear premature to conclude that it is irrational. In addition, a recent study (Jones et al., 1985) of several European nations suggests that teenagers are capable of using contraception adequately, given appropriate instruction and support for its use. Sexual intercourse is a normal adult activity. Where it fits in the human developmental process has not been adequately researched.

Utility/Reward Structure

The final part of the model is that of the individual's opportunity structure. This includes evaluations of the consequences of different actions and, as a result, the attractiveness of different options available to the individual. There are three studies that have begun to look at this process: Udry, 1978; Philliber et al., 1983; and

Adler, 1982. Philliber's and Adler's studies focus on contraceptive use, and will be considered in a later paper. One important assumption underlying these studies is that an individual's likelihood to engaging in some activity will be determined by his or her evaluation of the expected positive and negative outcomes of the behavior. If the positive outcomes outweigh the negative outcomes or costs, the individual will engage in the activity (if the opportunity arises); if negative outcomes outweigh positive outcomes, the individual will not engage in that activity. Thus much of this recent research focuses on measuring the individual's expectations of outcomes from different behaviors and then measuring the association of these expectations with actual actions the individual takes. The only study that uses this model to study sexual behavior is one by Bauman and Udry (1981), but these researchers use the concept of "utility" instead of value. Bauman and Udry (1981) found that the "subjective expected utility" (SEU) of sexual activity is correlated with sexual behavior. That is, those who expect to get the most out of sex are those who are more likely to engage in intercourse. Males have more positive SEU for sex than females. Black males have more positive SEU for sex than white males. Black and white females do not differ in SEU for sex. These results certainly make intuitive sense and fit with data that show black males with the highest and all females with the lowest proportion sexually experienced. This approach has not yet been tested for its predictive power, however.

Access to Alternatives

Direct control. One interesting difference between teenagers and their parents in values/norms is that teenagers think that their parents will agree with the statement that "the sexual behavior of teenagers is their own business and no one else's" much more frequently than parents actually do (Newcomer and Udry, 1985b). That is, teenagers perceive they have a right to more sexual privacy than parents perceive they do. This is not a surprise. One of the time honored ways of attempting to control children is through physical control over their behavior and most teenagers are still living at home. It is interesting, therefore, that the relationship between parental supervision/control and initiation of sexual activity is not clear-cut in the data. Hogan and Kitagawa (1985) found in a sample of black teenage girls that more supervision was associated with less sexual activity. Inazu and Fox (1980), and Newcomer and Udry (1984), in contrast, found that more supervision was not related to initiation of sexual activity. Of course, supervision can be low due to laxness or to lack of need. This cannot be determined with the data so far. Related but more indirect evidence comes from an examination of the effect of the employment of the mother outside the home. Presumably, employed mothers have less control over their teenage daughters' activities than mothers who are not employed outside the home. Thornton and Camburn (1983) found a positive but nonsignificant impact of full-time employment of the mother on whether or not a teenager had

ever had intercourse. Moore et al. (1984) found that for white but not black females age 15 to 16 in 1981, there was no different in sexual experience between those whose mother was employed and those whose mother was not employed. However, among those whose mother was employed, those who were left in their own supervision while their mother worked were more likely to be sexually experienced than those who were supervised by someone else. This analysis is based on a small number of cases, however; similar results were not found for black females or for males. In addition, a simple question as to whether the parent always knew where the child was did not distinguish sexually experienced from inexperienced girls.

Without knowing more about the degree and type of supervision and the amount and type of sexual activity, it is not really possible to make any generalizations about the impact of parental supervision. More work is needed on this issue, since it is one over which parents have some control.

Indirect limitation. Finally, what are the alternatives teenagers have to sexual activity? One of the most important questions would have to be the quality of the parent-child relationship. Presumably a close parent-child relationship would reduce the need for a child to seek love and companionship from an opposite sex peer at an early age. Of course, the teen years are the time of increased independence from parents. Some teens are more mature than others and begin the process earlier. But the quality of the relationship has generally been posited to have a delaying impact on initiation of sexual activity. Inazu and Fox (1980) and Moore et al. (1984) found some evidence for this in their research.

Given the importance of independence in the teen years, such a close relationship may not be sufficient. What other activities and rewards that compete with sexual activity are available to the teenager? This is one area in which apparently no research has been conducted. Such research could be critical in sorting out the importance of community level factors on the initiation of sexual activity, since social context probably affects available alternatives as well as attitudes and values of children. This is represented in Figure 1 by the arrows going directly to the alternatives and opportunities box from the psychosocial agents. (Watching television is one actitivity that apparently is very important to teenagers.)

Finally, alternatives and reward structures are probably closely related, since an individual can evaluate only those options available. However, the type of association is unknown; the curved double-headed arrow in Figure 1 indicates correlation, not cause.

CHAPTER 2

ADOLESCENT SEXUAL BEHAVIOR AS IT RELATES TO OTHER TRANSITION BEHAVIORS IN YOUTH

Margaret E. Ensminger

The way in which adolescent sexual activity is linked to other adolescent behaviors is the subject of this report. Two distinct but related questions will be reviewed. First, how similar or different are the theoretical perspectives and empirical results that have been associated with studies of adolescent sexuality compared to those that are associated with other adolescent behaviors? Second, to what extent does adolescent sexual activity covary with certain adolescent problem behaviors such as drug, alcohol, and cigarette use or delinquent behavior or other adolescent activities such as school performance or employment?

These questions have several important policy and theoretical implications. First, if several kinds of adolescent behavior tend to covary together (referred to as a syndrome by Jessor, 1983) and have similar correlates and antecedents, then designing separate interventions for each specific behavior may be inefficient. Second, by examining each behavior in isolation from the others, our understanding of the nature and origins of each may be limited. Third, by contrasting and comparing the antecedents and correlates of each adolescent behavior, we may be more precise about the specific conditions, circumstances and processes that lead to adolescent sexuality and childbearing.

Adolescent sexuality and other adolescent behaviors share certain common features. Adolescence is a developmental period in which an individual changes (over a varying length of time) from childhood into adulthood. In our society, many specific behaviors occur for the first time--drug, alcohol and cigarette use, the initiation of sexual activity, leaving home, and beginning to work. These transition behaviors (Jessor, 1983) may have important similarities that examining them separately would miss. The social and cultural norms that either prohibit or postpone substance and alcohol use, delinquency, and sexual experience may have the effect of attaching certain symbolic meanings to their occurrence. Autonomy, independence, peer acceptance, and having rejected social conventions may all be signified by these transition behaviors (Jessor and Jessor, 1977; Miller and Simon, 1980).

Adolescent sexuality, substance use, or antisocial behavior are often considered as "problem" behaviors. From the life-course perspective timing and sequencing of life transitions will influence the later life course (see Hogan, 1978). An early birth is associated with less educational achievement and a high probability of living in an unstable family unit with poor economic resources. From the life-course perspective, then, the "problem" of early sexual intercourse is that it is off-time (normatively speaking) and may thus hinder the psychological and social development of the teenager and may result in childbearing that has detrimental consequence for both the mother and the child.

With use of alcohol and drugs the "problem" is their illegality, their dependence producing nature, their physical and psychological harm to the user, and their negative effects on physical performance (including driving) and performance in social roles. With delinquency the problem is the possible harm to the individual and others in the environment and society. One of the basic distinctions between teenage sexual behavior and other transition behaviors such as delinquency and substance use is that sexual activity is part of normal, adult life. The issue, then, for adolescent sexual intercourse is the appropriate timing for the initiation of this activity. This is also the case with some of the other transition behaviors although it is less so. While alcohol use and status delinquent offenses are legally prohibited for minors, they are not considered as part and parcel of normal adult life.

An examination of the similarities in these adolescent "problems" may indicate that they occur together, and the combined study of interventions may increase our understanding and effectiveness. By comparing these with other "nonproblem" transition behaviors we can begin to understand how the transition from youth to adulthood affects the behavior of adolescents, in general.

The social context of the different behaviors may be the same. They often occur sequentially or at the same time. For example, alcohol and/or drugs are seen by many adolescents (and adults) as social cues for sexual activity. Delinquent activity often takes place concurrently with alcohol or drug use.

There may also be a developmental progression, so that engaging in one kind of activity makes it more probable that another type of behavior will be initiated. This progression approach would locate adolescent sexuality, then, on a continuum with other problem behaviors such as cigarette, alcohol, drug use and delinquency. The implication of this approach is that adolescents do not just go from conforming to nonconforming behavior, but one behavior serves as a stepping stone to another.

The historical association of the attitudes toward adolescent sexuality and substance use also suggests that they may be linked. The recent societal change in values regarding adolescent sexual

activity and drug and alcohol use occurred at the same time. The period during the late 1960s and early 1970s was a time of increases in substance use and sexual activity by youth. Symbolically, this was important for young people because these two activities were proscribed by the society at large. While premarital sexual activity has always occurred in American society, the period of the late 1960s saw a more explicit acknowledgement and at least limited acceptance of its existence. Drug use and sexual activity were associated in the perception of society, in rock music, and in the view that the United States had become more "liberal" in its personal standards. The examination, then, of adolescent sexuality with other adolescent behaviors seems appropriate.

First, I will review some of the theoretical perspectives that have been used to consider these behaviors. Second, the research results that have examined the covariation of these behaviors will be reviewed, and third, the similarities and differences in the association of these behaviors with gender, race, and social class will be summarized. It is hoped that this review will help us integrate adolescent sexual relations within the context of other adolescent activities.

THEORETICAL FRAMEWORKS

Several theoretical frameworks have been developed that are concerned with explaining an array of adolescent behaviors. These frameworks are largely social psychological with an emphasis on individual and family attributes.

Problem Behavior Theory

Jessor and colleagues (Jessor, Jessor, and Finney, 1973; Jessor, and Jessor, 1975; Jessor, 1976; Jessor and Jessor, 1977, 1978; Jessor, Chase and Donovan, 1980; Donovan and Jessor, 1984) have suggested "problem behavior theory" to explain the variation in these behaviors among adolescents. The fundamental rationale of the problem behavior perspective is the interpretation of many of the important transitions that occur during adolescence as behaviors that depart from the regulatory norms defining what is appropriate for that age or stage in life (Jessor and Jessor, 1975). Early sexual experience, problem drinking, delinquency, and illicit drug use represent in adolescence a claim on more adult status or a transition in development, and engaging in such behaviors at a time that is considered too early constitutes a departure from regulatory norms.

Within each of three systems--the personality, the perceived environment, and the behavior--the proneness for problem behavior may be defined. The important personality constructs are favorable attitudes, values, beliefs and expectations to problem behavior. High value on independence and low expectation for academic goals are both con-

ceptualized as favorable to problem behavior. In the perceived environment system, low support and control from significant others and approval for and models for engaging in problem behavior are the important constructs. Within the behavior system, the degree of involvement in other problem behaviors on one hand, and in conventional behaviors, such as church attendance and school performance on the other, are expected to predict problem behavior. Variation in the time of initial intercourse was related to these personality and perceived environment variables (Jessor, Costa, Jessor, and Donovan, 1983). In a nationwide sample of American adolescents, these same variables were related to both marijuana use and problem drinking (Jessor, Chase, and Donovan, 1980).

The problem behavior perspective has been criticized because the definition of what constitutes a problem is so connected to normative definitions, and the linking of sexual behavior with deviant and socially harmful behavior. Unlike most other "problem behaviors" such as alcohol or drug use, cigarette smoking, and delinquency, sexual behavior is expected to play a desirable role in adult life (Simon, 1985, personal communication).

Social Control Theory

A theoretical framework that has some similarity to the Jessors' problem-behavior theory in its focus on conforming and conventional behavior and the psychosocial context is Hirschi's social control theory. Social control theory has focused on explaining why people conform rather than why they deviate. Hirschi (1969) identified four elements of a social bond that constrain deviant behavior--attachment to others, commitment (dedication to pursuit of conventional means and goals), involvement in structural activities, and conventional beliefs. This perspective would argue that those adolescents who are strongly attached to societal institutions such as family, school, or peer group would be inhibited from engaging in deviant behavior.

The research using a social control theory perspective has been limited primarily to examining the relationship between measures of delinquency and social bond measures; however, several studies have included drug use or sexual activity as one of the outcome measures of deviant behavior. In Krohn and Massey's (1980) research, minor delinquency (which included an item on sexual activity as well as other behaviors) was related to low attachment to mother, low grade point average (part of the commitment scale), unconventional beliefs for males, and to low scores on scale of commitment and conventional beliefs for females.

Miller and Simon (1974) found that males high on parental involvement and low on peer involvement are least likely to report coital experience. While parental involvement was related for the females, peer involvement was not. These findings are similar to those found

for cigarette, alcohol and marijuana use in an urban black population (Ensminger et al. 1982)--school attachment inhibited substance use for both males and females; strong family bonds inhibited use by females but not males; and strong peer bonds was related to more use by males. Both the research in the problem-behavior framework and the social control framework show involvement in conventional activities, parental involvement, and conventional values to be negatively related to adolescent problem or deviant behaviors.

Critics of the social control perspective have pointed out that it implicitly assumes that the strength of one's social bonds are not influenced by gender, social class, race or other status placements (Kornhauser, 1978). Others argue that attachment to those who are non-conforming contributes to deviant activity.

Socialization Or Social Learning Theory

A third framework focuses on the individual's interaction with significant others within the social context. For adolescents these social contexts include the family, peer group, and school. The influence of significant others on adolescent behavior may operate through modeling so that adolescents whose parents or friends use drugs or alcohol may be more likely to use them then adolescents whose parents and friends do not use these substances. Peer group or family norms and values may also influence children's and adolescents' behavior.

In terms of sexual behavior, Gagnon and Simon (1973) suggest that sexual scripts help to organize and communicate the social expectations about sex. Interpersonal scripts provide the structures by which the individual presents him/herself to others and responds to others in ways that facilitate engagement. A traditional sexual script of the sixties might be that "nice girls don't."

Both parents and peers seem to be influential in adolescent behavior. Inazu and Fox (1980) report that daughters whose mothers have lived with a man to whom she was not legally married during the daughter's lifetime were more likely to be sexually active. Jensen and Brownfield (1983) found that attachment to drug-using parents does not inhibit drug use, a finding which supports socialization explanations. Social control theory suggests that attachment inhibits deviance even if the attachment is to someone who is deviant. Modeling or social learning theory seems to provide a better explanation.

Kandel and her colleagues (1973; Davies and Kandel, 1981) have studied the relative influence of parents and peers on drug use and future life plans. Kandel (1973) found peer drug use was a more important influence than parental drug use on the adolescent's drug use, but that the aspirations of the adolescent are more influenced by parents than by friends (Davies and Kandel, 1981).

A criticism of the socialization perspective is that it implies an overdetermination of behavior. Individuals often do not conform to how they have been socialized or taught. The tensions between the social prescription and individual wants or between tradition and social change are not reflected by this perspective.

Developmental Perspective

Adolescent behaviors, especially sexual behavior, are often considered within a developmental perspective. This perspective sees adolescent experience as resulting from the integration of early infant and childhood experiences with an increased expectation of more orderly, rationalized and socially responsible behavior. Miller and Simon (1980) argue that the developmental perspective is the most coherent for discussing adolescent psychosexual development. However, they criticize this perspective because of its lack of attention to the sociocultural context. Adolescent sexual patterns cannot be explained without reference to the existing definitions and expectations of adolescence.

Jessor and Jessor (1977) conceptualized various adolescent behaviors such as sexual intercourse and alcohol and drug use as transitional activities. The onset of these behaviors can be anticipated by the adolescent's psychosocial development and by the other behaviors he/she engages in.

Robins and Wish (1977) apply this perspective to the development of deviant behavior. They argue that the initiation of one behavior is in part a function of past deviant behaviors and also makes more probable the initiation of additional deviant behavior. According to this perspective, the cessation of deviance is also part of the sequence with children/ adolescents being pressured by society to develop valued skills and to give up behaviors that conflict with societal goals. Robins and Wish suggest that differences between subcultures regarding the ages that are considered appropriate for various activities may be a key to value differences between the subcultures as well.

Obviously, there are similiarities and overlapping among these perspectives, but they each focus attention on a different aspect of adolescent behavior. Problem behavior theory of Jessor and colleagues emphasizes the interrelationships among the perceived environment, personality and behavior and adolescence as a period of transition. Social control theory focuses our attention on the traditional institutions and relationships that affect adolescence. The socialization perspective focuses on the influence of significant others on adolescent behavior. The developmental framework views both past experiences and stage of life as crucial. Unconventionality of the studied behavior seems to be a common dimension to all the perspectives reviewed here.

THE RELATIONSHIPS AMONG VARIOUS ADOLESCENT BEHAVIORS

We now review some of the empirical work that examines the relationships among various adolescent behaviors.

Interrelationships Among Teenage Sexual Behavior, Substance Use, and Delinquency

Jessor and Jessor (1977) suggest that drinking, marijuana use, delinquent behavior, and sexual intercourse may constitute a "syndrome" of problem behavior in adolescence; they have focused on a broad array of adolescent behaviors rather than on a single outcome. Problem behavior is "behavior that is socially defined as a problem, a source of concern, or as undesirable by the norms of conventional society...and its occurrence usually elicits some kind of social control response" (p. 33).

Support for the syndrome notion emerged from the Jessors' parallel longitudinal studies of two different samples: one of junior high school students and one of college students. Fifty-three percent of the randomly selected junior high school students from a small city in the Rocky Mountain states agreed to participate and were assessed four times in high school and twice in their twenties. For the college study, randomly selected college freshmen from the same city were contacted and sixty percent agreed to participate. They were assessed six times, each year of college and again six years and eight years later when they had reached their thirties. The results showed that the behaviors were positively associated in both samples; an index of the behaviors correlated negatively with measures of conforming or conventional behaviors, i.e., attendance at religious services and school performance; and the various problem behaviors correlated similarly with personality and social environment variables that reflected unconventionality (Jessor and Jessor, 1977).

Donovan and Jessor (1984) have reanalyzed the earlier data using factor analytic models to test the hypothesis that the various problem behaviors reflect a single common factor. The results show that for the high school populations, sexual activity was significantly correlated with marijuana use, drinking behavior and a measure of general deviant behavior for males and females in both the third and fourth year of high school and for college females except for marijuana use in the fourth year. Further, the maximum likelihood test for factor analytic procedures demonstrated that only a single common factor was needed to account for the correlations among the behaviors for both the third and fourth high school years for males and females. For the fourth year college males, sexual behavior was not significantly correlated with any of the other behaviors. However, deviant behavior (at $p \leqslant .01$) and frequency of marijuana use (at $p \leqslant .10$) were correlated with sexual activity for year three college males. ($r = .32$ and $.20$ respectively.) For the college females, sexual behavior

was correlated (at least at the $p \leq .10$ level) with all the other "problem" behaviors in both years.

Church attendance, one of two measures of conforming behavior that was included, was negatively correlated with the frequency of sexual experiences in both years for the college men and women and in the fourth year for the high school females and in the third year for the high school males. School performance was less correlated with sexual activity (or with the other problem behaviors) than any of the other measures--grades were significantly negatively correlated with sexual activity only for the year four high school males and the year three college females.

A third population analyzed by Donovan and Jessor (1984) is from the 1978 National Study of Adolescent Drinking and consisted of a multi-stage stratified random sample of students in grades ten through twelve in the continental United States (Rachal et al., 1980). Since this survey did not address sexual activity, its findings cannot inform us as to whether sexual activity fits into a "problem behavior syndrome," but does include measures of cigarette, alcohol, and marijuana use and delinquent activity. The results from that study show significant positive correlations among measures of cigarette use, drinking, marijuana use, use of other illicit drugs, and general deviant behavior, and significant negative correlations between these measures and measures of conventional behavior for both males and females. The single-factor model was tested in eight subsamples and in all analyses could account for much of the correlations among the problem behaviors.

Both the high school populations and the college populations from the earlier studies were followed up in young adulthood (Donovan and Jessor, 1984). The frequency of sexual behavior and school performance were no longer appropppriate measures (i.e., not studied) of problem behaviors for these age groups, but drinking, marijuana use, other illicit drug use and general deviant behavior were. The single-factor model accounted for the correlations among these behaviors in young adulthood.

Miller and Simon (1974) also studied the relationship of sexual intercourse with other adolescent behaviors in a random stratified sample of 2,064 white adolescents aged 14-17 living in Illinois households. The survey collected data on sexual behavior, measured as the family, peer group, school adjustment, political attitudes, career and marriage aspirations, adolescent lifestyles and self-reported delinquent activities. One question addressed was the relationship of sexual intercourse to other behaviors. The authors made a distinction between drug use as a "counter cultural" activity with explicit challenges to the existing order and more traditional norm violations as indicated by delinquency. Clearly, coitus was associated with drug use in these data, but only five percent of the adolescents in the sample reported more than incidental drug use. Sexual intercourse was related to delinquent activity, especially for the males. The per-

centage of 16 and 17 year old males who had had sexual intercourse was very much higher for those who reported moderately high, high, or very high delinquent involvement--than for males with no delinquent involvement. This pattern was not so strong for the females. In results similar to those of Jessor and colleagues, Miller and Simon also found that adolescents who have had sexual intercourse are less likely to aspire to advanced education and less likely to report being very religious.

Using measures adapted from a study of delinquency (Kubik, Stein and Sabin, 1968), Zucker and colleagues (Zucker and Barron, 1973; Zucker and Devoe, 1975) in the early 1970s examined how problem drinking correlated with other problem behaviors in a population of 179 juniors and seniors in high school in a Middle Atlantic community. They found a strong association between the measures of drinking and the other problem behaviors measured: sexual behavior, drug use, delinquency, and serious physical aggression. Sexual behavior, defined as was less related to drinking for the females than for the males ($r = .28$ for the girls; $r = .59$ for the boys).

How drinking, sexual activity and contraceptive use were related was examined in a population of 370 undergraduate females in a large midwestern university by Zucker, Battistich, and Langer (1981). They found that the women who were heavy drinkers (ranging from drinking 2 or 3 times a month, with 5-6 drinks every time to drinking 3 or more times a day with 1-2 drinks nearly every time) had more frequent sexual involvement than their peers who drank less. Further, despite their more frequent sexual activity, they were significantly less likely to use birth control.

Robins and Wish (1977) addressed the question of whether deviance can be viewed as a developmental process in which one type of deviant act leads to another. They examined the ages and sequence of 13 kinds of behaviors in a population of 223 St. Louis black males born in the 1930s. Even though this study is based on a rather special population, it is summarized in detail here because it was the only study that systematically examined the sequencing of these adolescent behaviors. Precocious sexual experience as indicated by interview reports of first intercourse before the age of 15 was one of the behaviors. Others included elementary school failure, behavior problems in elementary school, dropping out of school before high school graduation, juvenile arrest record, having drunk alcohol before the age of 15, and behaviors commencing before the age of 18 including marijuana, barbituate, amphetamine, or opiate use, leaving home, marriage, and developing alcohol problems. The first four came from official records and the others were based on retrospective reports.

Robins and Wish found that the behaviors were intercorrelated--of the 78 contingency tables that examined their interrelationships, 42 (54 percent) were statistically significant and positive, 21 times the number of significant positive relationships expected by chance.

Sexual intercourse before age 15 was related to early marijuana use, early drinking, dropping out of school, early use of barbituates, and development of alcohol problems; it was not significantly associated in this population with opiate or amphetamine use, elementary school academic problems, excessive elementary school absences, leaving home early, early marriage or juvenile arrests.

They also examined in an actuarial test whether certain acts are plausible causes of others. They tested the significance of a difference in rates of an act between persons with and without a prior behavior while instituting controls for age at risk. Among the behaviors found to predict other behaviors, marijuana use, school absence, and early drinking were the most potent. Dropping out of school and alcohol problems were best predicted by the others. Precocious sexual behavior was logically possible (based on age of initiation) as a predictor of all 12 of the other behaviors. It actually did significantly predict dropping out, barbituate use, marijuana use, and early drinking. These relationships remained significant when spuriousness was tested by controlling on other significant predictors. There were four logically possible antecedents of precocious sexual activity--early drinking was the only one found to be significant.

Finally, they assessed whether certain acts are "necessary" by establishing whether the second act almost never occured unless preceded by the first or "sufficient" by examining whether the first act was almost always followed by the second. Sexual experience qualified as a "necessary" cause for marijuana use--in 78 percent of the cases, marijuana users had previously had sexual experience before their first use of marijuana.

It is important to note that many of the studies just summarized are based on data collected over a decade or more ago when marijuana use and sexual intercourse by unmarried teenagers were considered more deviant than they are now. Hence, we must be cautious in generalizing these results to the current cohort of young people. However, these studies do present data collected from a wide diversity of young people in terms of social class, cohort, region, gender, race and age. The finding then that teenage sexual intercourse, substance use, and delinquency are interrelated has been found among a variety of study populations in studies conducted over a span of several decades.

Delinquency, Alcohol and Drug Use Studies

Researchers with a focus on one of the transition behaviors, such as delinquency or substance use, have often included its association with one or more of the other behaviors. We review some of this work here. They differ from the studies just reviewed in that their focus is not on the interrelationships among these adolescent behaviors, but on the explanation of a specific behavior.

Among researchers who study juvenile delinquency, frequency of sexual intercourse has often been used as one of many items measuring delinquency. For example, Krohn and Massey (1980) included alcohol and drug use and frequency of sexual intercourse in a delinquency checklist administered to a sample of 3065 adolescents in grades 7 through 12 in six communities in three midwestern states. A factor analysis was computed on all these items and four factors were identified. Sexual intercourse loaded on a factor labeled "minor delinquent acts" along with running away from home, truancy, and school suspension and/or expulsion. The scale composed of these items strongly correlated (the correlation coefficient ranged from .42 to .59) with the other measures of delinquency--alcohol and marijuana use, use of harder drugs, and the serious delinquency scale; the correlations among these scales were also strong.

In a study of delinquent activities, Kubik, Stein and Sarbin (1968) administered a checklist of 52 delinquent behaviors to 505 boys attending three high schools in the California Bay Area and 301 boys from eight California delinquency institutions. They were between the ages of 14 and 18. Sexual intercourse was one of the delinquency items. Cluster analyses were performed and four dimensions emerged. Sexual intercourse had a high factor loading on a cluster labelled delinquent role that also included items indicating alcohol use, gang activity, and school problems. The other three factor dimensions were drug use, parental defiance and assaultiveness.

Adolescent drug use was correlated with sixteen other adolescent behaviors for 231 Ontario ninth grade students (Hundleby et al. 1982). Most of these students attended a Roman Catholic school. Sexual behavior was more strongly correlated with alcohol, tobacco, pain killers and marijuana use than were any of the other 15 adolescent behaviors. The other adolescent behaviors that were positively related to drug use were general delinquency, school misbehavior, and adolescent social behavior (visiting a friend's home, going to a party, other social events, etc.). Studying/reading and academic achievement were negatively related to drug use. Behaviors that were not related included participation in team sports, religious behavior, musical/cultural activities, part-time employment, family excursions, and club participation.

Adolescent Health Behavior

Several studies have also examined the relationship of adolescent sexual activity to other adolescent health behaviors. While many are the same behaviors as those described above, they are considered in a "health" framework along with additional health-related activities. Whether health behaviors are uni- or multidimensional has been a focus in several of these studies.

In a longitudinal study of 293 sixteen-year old students in the Haifa area of Israel, Epstein and Tamir (1984) studied the development of several health related behaviors--cigarette smoking, sexual behavior, use of drugs and alcohol, and dropping out of school over a two year period. Initiation of sexual intercourse over the two years was related to both beginning to smoke and dropping out of school. Among males, 64.3 percent of those who began smoking had sexual intercourse for the first time during the study period, as compared to 20 percent of those who did not begin to smoke. For females, 38.5 percent of the smokers had intercourse compared to 13 percent who did not begin to smoke. Students who either smoked, had intercourse or drank alcoholic beverages at the first wave of the study were much less likely to remain in school. None of the students who smoked daily at age 16 or had used hashish continued on with school, and a substantially smaller proportion of those who sometimes smoked continued their schooling as compared to nonsmokers. The findings for males, were similar. Of the males, 30.9 percent who dropped out of school had had sexual intercourse by age 16, compared to 13.2 percent of those who continued their studies. Likewise, 26.6 percent of the males who stopped school drank alcoholic beverages compared to 13.7 percent of those who continued in school.

A study of 1,546 males born in 1956 and residing in the Jyvaskyla military district in Finland investigated the interrelationships among health habits (Kannas 1981). In 1975, mailed questionnaires were sent to this population with a return rate of 75.6 percent. Sixteen health behaviors were assessed including number of sexual partners, food habits, use of drugs, cigarette and alcohol use, personal hygiene, use of dental care services, sport activity, regularity of bedtime, use of traffic reflectors, and consumption of health information. Smoking was the behavior that correlated with the most other habits, and its second highest correlation was with number of sexual partners. Number of sexual partners was also highly correlated with excessive use of alcohol. In a factor analysis of the behaviors, these three behaviors received high loadings on the second factor which was labeled as "la dolce vita." The author concluded that while certain health behaviors occurred together, in general, the results showed that a person behaving unhealthfully in one area does not necessarily act in a way that might harm or endanger health in all areas.

Zabin (1984) recently examined the relationship of smoking to sexual behavior among 1200 female adolescents attending 32 contraceptive clinics in the U.S. Adolescent females are now more frequent smokers than adolescent males--twenty six percent of 17-19 year old females were smoking in 1979 compared to 19 percent of the males (Green, 1979). Zabin found that those who initiated sexual intercourse in early teenage years smoked more than others in their age groups--23 percent of those girls 16 or less years old were smoking at least a half pack of cigarettes per day. Further, the clinics reported that over 70 percent of the teenage clients adopted the pill as their prescribed method of birth control. Given the known risk of

circulatory disease among pill users who smoke (Royal College of General Practitioners 1981), the future health implications of this pattern of smoking and pill use deserve some attention.

With the increased attention (and perhaps, incidence) directed toward anorexia nervosa and bulimia, some have noted the connection between eating behaviors and other "motivated" behaviors (as opposed to reflexive or automatic behavior) such as drinking, sexuality and drug use (Andersen, 1984). Given that the typical anorectic individual is an adolescent female, the relationship between eating behavior and other adolescent behaviors may be of interest. Andersen (1984) cites less sexual activity and "model" behavior as characteristic of anorexia nervosa in contrast to bulimia, in which more sexual activity and behavioral problems are characteristic. However, there is very little research that has compared the behavior of teenagers with eating problems to those without, or research that examines eating behavior in the context of other behaviors.

Summary of Research Findings

In summary, while adolescent behaviors have largely been studied in isolation from each other there have been investigators who have been interested in the relationships among these behaviors. Jessor and colleagues have included adolescent sexual behavior in a "syndrome" of problem behaviors and have shown that it is positively associated with cigarette, alcohol, and drug use and deviance, and negatively correlated with conforming behaviors. Miller and Simon found that adolescent sexuality is related to drug use, delinquency, and low school aspiration and low religiosity. Robins and Wish have presented data that supports the developmental sequencing of problem behaviors with sexual experience as one of the stepping stones. The delinquency literature has used measures of adolescent sexual activity as a delinquency indicator. It seems to be associated with other, more central measures of delinquency. The work of Zucker and colleagues found that adolescent sexual behavior is related to drinking; their work on heavy drinking among college females suggests that not only is heavy drinking related to more sexual activity, it is also related to less contraceptive use.

While Andersen suggests that "motivated" behaviors should be examined together, there is little research that has focused on adolescent sexual activity, eating behavior, and drug, cigarette and alcohol use from this biologically-based perspective of drives, appetites and satiation.

Increasingly, adolescent sexual behavior has been studied as a health behavior in relation to other health behaviors. This literature shows that adolescent sexual behavior is related to cigarette, alcohol and substance use, but not necessarily to other risky health behaviors.

SIMILARITY AND DIFFERENCES IN BEHAVIORS FOR DIFFERENT ADOLESCENT BEHAVIORS FOR DIFFERENT SUBGROUPS OF ADOLESCENTS

A number of studies have explored the social, psychological and family characteristics that seem to differentiate those adolescents that engage in specific behaviors from those who do not. Again, however, these studies tend to focus on one or two adolescent outcomes rather than on a cluster of behaviors. While it would be very useful to compare and contrast the antecedents of these behaviors this task is beyond the scope of this review. However, examining whether the same subgroups of adolescents who are more likely to engage in one of the behaviors are the same as those more likely to engage in the other behaviors would be helpful in determining the relationships among the problem behaviors. In this section, we will examine whether subgroups of adolescents who are likely to engage in one of the transition behaviors are also more likely to engage in the other behaviors. It may be that the patterns of relationships among these behaviors vary for different subgroups.

Sex, race, and social class are major structural divisions within society and often reflect differences among people in social roles, behavior, attitudes, and opportunities. It is important to examine, then, how teenage behaviors vary according to these structural divisions and whether the same categories of adolescents who rank high on one behavior are the same as rank high on another.

Sex

Adolescence is such an important time for the initiation and crystallization of adult sex roles that we would certainly expect adolescent males and females to exhibit different behaviors from one another. Sex differences in adolescent behaviors can take several different forms (Ensminger, Brown and Kellam 1982). First, males and females could differ in how much they engaged in certain behaviors. Second, the antecedents and correlates for the behaviors could differ for males and females, e.g., low parental supervision might be related to more sexual behavior for females but not for males. Third, an antecedent may be similar for males and females but it might occur more frequently for one sex than the other, e.g., school failure may be an antecedent to sexual activity for both sexes, but males may be more likely to fail school than females.

In reviewing the antecedents to teenage behaviors, we will note whether they are related for both males and females or only one. Unfortunately, studies often include only males or only females. For example, many studies of delinquency have only male subjects (see Harris 1977) while many studies of adolescent sexual behavior only include females (see Chilman 1978).

Male teenagers report more sexual experiences than females although increased rates of premarital sexual intercourse for females during the 1970s has decreased this gap (Zelnik and Kantner 1983). An important issue is whether the convergence in male and female rates of intercourse indicates that the meaning of premarital sexual behavior is similar for the two sexes. Simon et al. (1972) argue that increased levels of female sexual activity are not accompanied by radical changes in the meaning of this activity. While much of the sexual activity of males is directed toward the confirmation of masculinity, for females sexual activity is more likely to indicate emotional involvement with their partner. The results from a national probability survey done in 1979 of young women, aged 15-19, and young men, aged 17-21, support this contention (Zelnik and Shah 1983). The young women (64.5 percent) were more likely than the young men (37.1 percent) to have been engaged or going steady with their first sexual partner while the young men were more likely to report being friends or to have only recently met their first partner (11.1 percent for the females compared to 43.0 percent for the males).

Antonovsky et al. (1980) report similar findings from a nationwide sample of 5410 Israeli adolescents. While females raised on the kibbutz had similar rates of premarital sexual intercourse as kibbutz and non-kibbutz males, their pattern of sexual behavior was more similar to the nonkibbutz females (who had much lower rates of sexual experience) than to the males. That is, their first sexual experience was very likely with a steady boyfriend (88 percent) and they were more likely to have had only one partner (75 percent). These rates for the males were 46 percent and 42 percent (nonkibbutz) and 52 percent and 53 percent (kibbutz).

These two studies suggest, then, that even though the previously found sex difference in age of initiation and frequency of sexual intercourse may be declining, sexual intercourse may still have a different meaning for teenage females then for teenage males.

Differences in substance use rates between adolescent males and females have also declined over time (Johnston, Bachman and O'Malley 1982). However, there are different patterns in how different variables related to use for males and females. While females are as likely to smoke cigarettes as males, female adolescent smokers have better grades, less truancy and more religious commitment than male smokers. However, these same variables are partly responsible for the lower use of alcohol and marijuana by females (Bachman et al. 1981). In a population of urban black adolescents, Ensminger et al. (1982) also found different patterns of relationships for males and females between substance use (cigarettes, marijuana, and alcohol) and other social bonds. Strong bonds to their families reduced the level of use for females, but not males, while strong peer bonds was related to higher substance use for males but not females. Both males and females with strong attachment to school were less likely to report heavy substance use than adolescents with lower school attachment.

Male adolescents are much more likely to be delinquent than females, whether official (police or court statistics) or self-report measures are used (Harris 1977), and much of the delinquency literature includes only males (see Harris 1977; and Loeber and Dishian 1983). Harris (1977) argues that we cannot begin to understand the origins of delinquency and crime until we understand why males and females differ so much in delinquent behavior. However, few studies have focused their attention on this sex difference.

These studies suggest that, in general, sex differences in frequency of these transition behaviors has been declining in recent years, but that the patterns of these behaviors and their meanings may still be quite different for males and females.

Social Class

The study of the relationship of social class to adolescent behavior differs somewhat from the study of social class to adult behaviors. First, for children and adolescents social class is an ascribed rather than an achieved characteristic as it is for adults--measures of social class are based on the child/adolescents' parents rather than on their own characteristics. Second, the basic organization for children/adolescents is based on age; while parental social class certainly influences which school a child attends, age is much more important in determining placement for children than for adults. For adults, social class seems to influence how they feel about themselves to a greater extent than it does for children or adolescents. Rosenberg and Pearlin (1978) compared the relationship of social class to self-esteem for children and adults. They found no relationship for children, a modest association for adolescents and a moderate association for adults. They suggest that adults perceive their social class standing as a reflection of their efforts and achievements while children do not. Social class may influence adolescent behavior, then, by way of different expectations or practices of parents, differences between schools in lower class neighborhoods vs. schools in middle or upper class neighborhoods, or the adolescents' realistic expectations about their possibilities of college education.

Third, since most studies do not survey parents as well as adolescents, the measures of social class are often based on the child's report of the parents' education, income, or occupation. The validity of such measures has not been established.

As reported by Hofferth, relationships between measures of parental social class and teenage sexual activity often disappears once certain factors are controlled, especially educational aspirations. However, parental social class may influence adolescent sexual behavior through its effect on aspirations--adolescents from lower class backgrounds have lower educational aspirations and adolescents with lower education aspirations are more likely to be sexually active.

Miller and Simon (1974) conceptualized measures of parents' social class as social origin indicators and educational aspirations as anticipated social class. They found that social origins were not related to teenage sexual behavior, but that anticipated social class was for both males and females. Hogan and Kitagawa (1983) found in a study of black teenage girls living in a poverty area in Chicago that these girls who were from poor areas had a higher rate of initial sexual intercourse than did those living in better off neighborhoods. Data from the National Longitudinal Survey of Youth presented in Volume 1 of the panel's report also indicates that teenagers from lower class families (as indicated by mothers' education) are more likely to be sexually active than are teenagers from middle or upper class families. These findings are stronger for females than males.

The relationship of parental social class to adolescent substance use has not been strong. In a survey of a nationally representative sample of high school seniors, a mean of father's and mother's educational attainment shows little association with drug use (Bachman, Johnston, and O'Malley 1981). Kandel (1980) in a review of studies of drinking and drug use, reports that alcohol and marijuana use do not vary according to socioeconomic status.

Whether lower social class is associated with higher rates of delinquency has been an issue of some controversy. Some suggest that while poor youths have higher rates of official delinquency than middle class youths, they have similar self-reports of delinquent activities, indicating discrimination by juvenile justice authorities (Gould, 1969, 1981). Others argue that self-report measures that tap more serious forms of delinquency do show more involvement by lower class youth (Elliott and Ageton 1980; Elliott and Huizinga 1983). In a review of studies that examine the relationship between crime or delinquency and social class, Tuttle, Villemez and Smith (1978) conclude that the relationship is weak. However, in a review of prediction studies of delinquency Loeber and Dishian (1984) report that the parents' socioeconomic status significantly improved the prediction of both delinquency, and recidivism over chance, even though it was one of the lowest ranking predictors.

Race and Ethnic Differences

In surveys of drug use and sexual experience race has often been measured and social class has not, making it hard to control on social class when studying effects of race. This is a problem because of the strong relationship between poverty and being black. In the most recent national surveys of adolescent drug use, blacks have slightly lower reports of drug use than whites (Bachman, Johnston and O'Malley 1981). However, blacks report higher rates of adolescent sexual experience (Zelnik and Kantner 1980).

Conclusions regarding the relationships of social class and race to the patterns of adolescent behaviors must be regarded as tentative. The purpose of this review is to examine whether these major social structural variables relate to the transition behaviors in similar ways. The studies reviewed here that have included measures of multiple transition behaviors have not been done on populations with enough variation in ethnic group and race or social class to carefully examine these interrelationships. So while we know that adolescent blacks tend to report less drug use and more sexual activity than whites, these findings come from different studies; and we cannot examine how patterns of these activities vary by race of social class. For example, a normative sequence of transition behaviors may exist, but it also may vary by these social structural divisions. Current data either does not exist or has not been analyzed to answer these questions.

DISCUSSION

An important issue underlying this review has been whether a unique set of factors explains each adolescent behavior that have been considered here or whether a common set of factors precedes them all. The research reviewed here strongly suggests that the initiation of sexual activity is correlated with alcohol and drug use and delinquency and that at least some of the social and psychological factors are the same. However, not enough is known yet about the sequence of these behaviors, how subgroups may differ in the sequence or in the social and psychological antecedents, or how the relationships among the behaviors and their antecedents may vary by subgroup.

Very few studies have focused on examining the interrelationships among these behaviors, and even fewer have examined the similarity or differences in antecedents or conditions that are associated with the behaviors. The work of Robins and Wish strongly suggests that there may be a patterning to the initiation of these behaviors, but since their sample was composed of black men born in the 1930s, we cannot assume that the sequence is the same or even similar in other populations. Clearly, we need much more study of how these behaviors are interrelated for more recent cohorts of adolescents. We also know very little about whether or how the interrelationships vary for different groups of adolescents. Gender, social and family origins, race and ethnic group membership, and schooling all influence the experience that young people have had. Yet, we know very little about how these variations may affect the patterning of these behaviors.

The function of these behaviors for the individual have not been adequately conceptualized either. While problem behavior theory suggests that adolescent sexual behavior, substance use and delinquency may be attempts by adolescents to assert their independence, few investigators have attempted to differentiate those adolescents whose involvements in these behaviors endanger their successful completion

of schooling or establishment of other adult social responsibilities from those whose involvements do not entail such risks. Certain adolescents may engage in "too early" sexual behavior and excessive alcohol or drug use as a way of avoiding school or the development of other social skills, while other teenagers, in contrast, may be engaging in such behaviors as an attempt to establish adult status. We need better conceptualization and more examination of the function of these behaviors.

A second area in which both research and theory-building is lacking concerns the relationship of these adolescent behaviors to societal norms and expectations. One common factor underlying these behaviors is that they are all activities that are considered inappropriate or deviant for young people to engage in. Yet, we know very little about what the expectations are about when is the appropriate timing or how these expectations may vary across society. For example, much research has indicated that parental expectations for their adolescent children's future education are very important in influencing their children and that these expectations vary by the education and income level of the parents. However, we do not know what age parents expect their adolescent children to begin sexual activity, or decide whether to drink alcohol or smoke cigarettes. We also do not know if these expectations are related to each other. So even though these behaviors all represent deviations from adult societal sanctioned behaviors, we know very little about what timing and patterning is appropriate or approved. More attention needs to be paid to what societal expectations are for the initiation of these behaviors and how these expectations vary across society.

A separate issue concerns the placement of adolescent sexual behavior in a similar framework with misbehaviors such as drug use or delinquency. Sexual activity may have positive contributions for certain adolescents such as enhanced self-esteem, increased independence and improved social competence. If examined only within a problem behavior framework, any possible positive contributions would not be observed.

In summary, the research findings reviewed here suggest that sexual activity is generally not an isolated behavior. Adolescents who are sexually active also are more likely to be involved in other behaviors that are not considered appropriate for adolescents such as smoking, alcohol and drug use and delinquency. Jessor suggests that these behaviors may reflect a lifestyle. Clearly more work is needed in this area to better understand these interrelationships. Additional study of these interrelationships should further our understanding of early sexual behavior of adolescents and whether different adolescent behaviors, including early sexual activity, may be serving similar psychological and social functions. The answer to these questions may have very important implications for prevention and intervention programs. Prevention programs aimed at widening teenagers aspirations for the future, increasing social and interpersonal skills, and

involving them in more school and community activities may reduce their participation in a variety of deviant activities. Conversely, prevention or intervention attempts aimed at one specific outcome may have the unintended result of increased involvement in other undesired behaviors. These types of prevention/intervention efforts would have theoretical as well as practical significance and could be used to test whether different adolescent behaviors stem from the same social and psychological causes. We still have much to learn about how these adolescent behaviors interrelate and what functions they serve in adolescent development.

CHAPTER 3

CONTRACEPTIVE DECISION-MAKING AMONG ADOLESCENTS

Sandra L. Hofferth

Unlike many other activities which require a conscious effort, conception is highly likely (given sexual activity) unless some action is taken to prevent it. One writer suggested that if it were the reverse, civilization would have long since died out. There is a certain cost to making a decision to act--it requires motivation, time, resources, and knowledge. It requires a change in behavior--overcoming inertia, as it were. This takes time and energy. Thus it is really no surprise that the risk of pregnancy is highest during the first months of sexual activity (Zabin et al., 1979). However, it appears that that risk is also higher the younger the girl. Although contraception may be problemmatic for older women as well (Tanfer and Horn, 1984), it may be especially problemmatic for teenagers. This is because effective use of contraception is linked to the process of defining oneself as sexually active, becoming aware of pregnancy risk and its consequences, developing motivation to prevent pregnancy and taking active steps to prevent an unwanted pregnancy.

The major question that will be addressed in this chapter is, given sexual activity, what determines whether a teenager takes active steps to prevent pregnancy? The chapter is organized as follows. Background is first provided on contraceptive use among teens compared to adults. Second, a framework is provided to organize the review. Third is a discussion of some methodological issues, in particular, different ways to measure contraceptive use and their implications. The research that bears on the issue of contraceptive use versus non-use is presented, following the model presented earlier. Finally, the findings are summarized, conclusions drawn and implications for further research presented.

BACKGROUND

Table 2.7 displays the number of women age 15-44 exposed to the risk of unintended pregnancy who are currently practicing contraception. Women exposed to the risk of unintended pregnancy includes those practicing contraception, and those not practicing contraception who had sexual intercourse in the last three months and were not pregnant,

postpartum, seeking pregnancy, or noncontraceptively sterile. Never-married women of all ages are less likely than married women to practice contraception; of these, teens are the least likely to practice contraception (Bachrach, 1984). The proportion contracepting is very high: 9 of ten women at risk of unintended pregnancy. Never-married women are less likely than married women to practice contraception, and, of these, teens are the least likely to contracept: 69 percent of never-married teens 15-19 were practicing contraception. Thus 30 percent of never-married teens 15-19 at risk of an unwanted pregnancy were not contracepting.

There are substantial black-white differences, with black teenagers less likely than white teenagers to be contracepting (Table 2.8). However, since blacks who are exposed to the risk of pregnancy are likely to be younger and less economically well-off, and since the young and the poor are less likely to use contraception, this difference may merely reflect socioeconomic differences between the two groups. This will be explored further in a later section.

Table 2.9 shows contraceptive use by Hispanic teenagers compared with non-Hispanic black and white teenagers. Hispanic teenagers are less likely than white but more likely than black teenagers to be currently contracepting. This table includes teenagers of all marital statuses. More Hispanic teenagers are married, which may explain the rather small differences among the three groups. A comparison of sexually active never-married teenagers of Hispanic and non-Hispanic descent would be more appropriate but the data are not currently available.

One problem with statistics is deciding what the appropriate comparison group is for teenagers. Is it women 20-44 of all marital statuses? A much larger proportion of older women than teenagers will be married, and marriage improves contraceptive practice. A better choice might be never-married women 20-44. The only problem is that there are few women above 30 who have never been married. Those who haven't may be unusual and therefore, not constitute an appropriate comparison group. A good choice, therefore, for a comparison group appears to be never-married women 20-24 (and perhaps 25-29). They are similar in marital status and, given the increasing proportion in their twenties who have never married, probably not exceedingly different from their married peers in other respects. Fortunately, several sources contain information on contraceptive use among never-married women in their twenties, making possible comparisons with teenagers. It is clear that contraceptive use does improve with age. Table 2.7 showed that 81 percent of never-married women 20-24 practiced contraception compared with 69 percent of those 15-19 in 1982. A second study found that 85 percent of never-married sexually active women 20-24 were currently using contraception (Tanfer and Horn, 1984).

Table 2.8 shows the methods currently used by never-married users 15-19 and 20-24 in 1982. Teens are more likely than 20-24 year olds

to use the pill and the condom; they are less likely to use the IUD, diaphragm or other methods. Teens are unlikely to be sterilized for contraceptive purposes. The probability of sterilization is higher for 20 to 24 year olds, and surprisingly high given their age. (Of course, many of these young women may have children, though unmarried and their partners may also have had children and had vasectomies). Although there are differences between the two age groups, the differences are not that striking. The largest difference appears to be in condom use. Almost 4 times as many teens say that it is their current method, compared with 20-24 year olds.

Table 2.9 shows the current method used by Hispanic and non-Hispanic teenage contraceptive users in 1982. Two thirds of Hispanic teenagers use the pill and 9 percent use the IUD or are sterilized, which results in a very high level of use of effective methods (pill, IUD, sterilization), a level as high as that of blacks, among whom three quarters use the most effective methods. Again, this table includes teenage women of all marital statuses. The high level of effective contraceptive use among Hispanic teenage women is probably due to the higher proportion of married teenagers among Hispanics.

One important issue is that of trends over time. According to data from the National Survey of Family Growth, among 15 to 24 year old currently married users, pill and IUD use declined substantially between 1973 and 1982, while use of sterilization and barrier methods such as the condom and diaphragm increased (Bachrach, 1984: Tables 7 and 8). Trends among teenagers are somewhat different. According to data on never-married teenagers 15 to 19, between 1971 and 1976 pill use increased. Then, between 1976 and 1979, pill and IUD use dropped while diaphragm and condom use increased. Data from the 1982 NSFG survey suggest that the use of both pill and diaphragm among teenagers increased since 1979 (Table 2.8). Since the measures are not identical the size of the increase cannot be taken as definitive. However, the data certainly show that the decline in pill use since the late 1970s has been reversed. Sterilization showed major increases among young women as well as older women, though levels are still very low among young unmarried women.

The model used here for contraception was developed by Delameter (1983). It assumes that individuals determine and evaluate the potential consequences of their actions and, after weighing these consequences, act so as to maximize their benefits or minimize their costs. This calculation need not be made consciously or even carefully. These basic assumptions are common to several theoretical models in use today: The Health Belief model (Nathanson and Becker, 1983), the Fishbein model (Fishbein, 1972; Fishbein and Jaccard, 1973), the economic utility model (Bauman and Udry, 1981; Becker, 1960; Willis, 1973; Namboodiri, 1972),), and the Luker model (Luker, 1975; Philliber et al., 1983).

In this model, the proximal factors affecting contraceptive behavior are the perceived probability of pregnancy, given intercourse, and its frequency, and the cognitive assessment of pregnancy, as well as positive and negative experience with contraceptives. The psychosocial factors in the model of sexual intercourse presented in Chapter 1 determine whether and how often intercourse takes place. In addition, these same factors (society, family, peers) also affect the individual's perceived probability of pregnancy and cognitive assessment of pregnancy and well as attitudes toward contraception and some portion of experience with contraceptives.

METHODOLOGICAL ISSUES

A variety of measures have been used to study contraceptive use. One of the first issues to address is at what point should contraceptive use be measured: first intercourse, last intercourse, in last month, currently? There appears to be no apparent rationale for using one or the other measure. One distinction does appear to be important. That is the distinction between use of contraception at first intercourse and continuing use of contraception. Contraceptive use at first intercourse (Table 2.2) is poorer than current use (Table 2.8); this is the case for those whose first intercourse occurred when they were under 18 as well as those whose first intercourse occurred when they were 18 and older (Table 3.3; Figure 3.1). Nonuse at initial intercourse and during the first months of sexual activity appears to be problemmatic: the risk of pregnancy is highest in those months (Zabin et al., 1980). The decision to first use contraception appears to be an important one. And the factors associated with initiating contraception may differ from those associated with continuing contraceptive use, once initiated. Thus the second major concern will be a discussion of the factors associated with continued contraceptive use including the difficulties associated with using it, change from one method to another, and the effectiveness and consistency of use.

A second important issue is which of the variety of measures of current use that have been utilized by researchers are most appropriate. Measures include whether ever used contraception, frequency or regularity of use, use at last intercourse, use during last month. Since these measures are all relevant to one concept, continuing use, the results of the research will be discussed together. One study (Herold, 1980) comparing these various measures will be discussed.

Another issue is how to measure the type of contraception used and its effectiveness. Questions involve not only the time point at which use is measured (first, last intercourse, current use) but also whether and how methods are grouped: e.g., medical (pill, IUD) vs. non-medical methods, prescription (pill, IUD, diaphragm) vs. non-prescription methods; more effective vs. less effective methods; rank ordering of effectiveness; scale score based on use effectiveness.

One of the major problems with the research in contraception appears to be its static nature. Contraceptive use at one point in time may not be a good proxy for use over the period of a year or more. Panel data that bears on this issue will be described.

Another important issue is that of comparability with a sample of similar older women. Where possible this chapter compares the results for teenagers with those for older women to see if and where the findings differ.

Finally, most of the analytic work so far has been based on data collected by Kantner and Zelnik (cf. Zelnik et al., 1981) in 1971, 1976 and 1979. Although the National Survey of Family Growth conducted in 1982 was released in 1984, so far no analytic studies of the type that would show factors associated with contraceptive decision-making have been completed. There is no reason to believe that the factors associated with contraceptive initiation and continuation have changed over time. Therefore, it makes sense to discuss the results obtained from that earlier survey as a baseline for understanding. Unfortunately, neither the National Survey of Young Women nor the National Survey of Family Growth provides the kind of information about potential rewards and costs of pregnancy and the perceived probability of pregnancy that could shed light on details of the theoretical model. Thus most of the studies discussed here are reduced form models with no intervening variables. This is not problemmatic as long as it is recognized that background factors are not expected to have substantial direct effects on contraceptive initiation and continuation. To fill in the detail on intervening factors this review focuses on a few small scale studies that have collected such information. Although these studies are generally conducted on highly selective samples, the information they provide is useful in evaluating the model.

RESEARCH

Frequency of Sexual Intercourse

There is only one study so far to explore factors associated with the frequency of sexual intercourse among never-married teenagers. Zelnik et al. (1981) found that white teen women who reported that they had marriage plans, who used a medical contraceptive method at last intercourse, and who had had 4 or more partners had a higher frequency of intercourse than their peers. For black teen women, having had a greater number of partners and having used a medical method at last intercourse were associated with a greater frequency of sexual intercourse.

Probability/Risk of Pregnancy

What is the "best" way to measure contraceptive use depends on the purpose of the study. If researchers wish to measure how adequately individuals protect themselves from an unwanted or unplanned pregnancy, they would first need to adequately measure motivation to avoid pregnancy. Some individuals, for example, may be trying to get pregnant. Others may be infertile for a variety of non-contraceptive reasons. Finally, others may not care if they become pregnant or not. Some individuals may be knowledgeable about their menstrual cycle and may contracept actively only during the high risk parts of the cycle. In this case it would be helpful to know how accurate the individual's knowledge is about the menstrual cycle and at what time of the cycle the questions are asked.

Table 2.10 shows perception of risk of pregnancy to be poor among teenage women, even among those sexually experienced. In 1976 only two out of five could name the time of month of greatest pregnancy risk. On the other hand, a number of contraceptive methods do not require any knowledge of time of greatest risk, and some studies suggest that users of such methods are least knowledgeable about timing of pregnancy risk (Presser, 1977). Thus it may not be critical to know exactly when pregnancy is most likely to occur to use contraception effectively, only that the risk is relatively high. The association between knowledge about pregnancy risk and use of contraception is not very strong, though it has been found in a few studies (Philliber et al., 1983; Cvetkovich and Grote, 1980). The relationship between knowledge of methods and contraceptive use is also not very strong (Flaherty and Marecek, 1982; Poppen, 1979). This appears to be because most teens can name several methods. What kind of knowlege leads to earlier and more consistent use of contraception is an issue that needs additional exploration.

Cognitive Assessment of Pregnancy

How do teenagers feel about pregnancy and childbearing? Do they want to become pregnant? Do they not care? Do they not want to avoid it strongly enough to contracept adequately? What information do we have about this issue?

There is, of course, an important distinction between childbearing intention and wantedness of a child. In particular, most young childless women eventually do want children. Thus many teenage pregnancies are timing failures; this does not imply that children are not wanted ever. A child may be wanted, but not at that time. Three categories of child-bearing intentions at the time of conception are commonly distinguished:

1) Timing success - a child is wanted at that time;
2) Timing failure - a child is wanted, but not at that time;
3) Unwanted - a child is not wanted at that time or ever.

Of those young women who become pregnant as teenagers, about 45 percent have abortions (excluding miscarriages from the total) (see Pregnancy Resolution). Presumably abortions represented unwanted pregnancies. Early studies showed that of those teens who experienced a first birth as a teenager, only about half (45 percent) could be considered intended or timing successes, that is, both wanted ever and wanted at that time (Trussell and Menken, 1978). The majority (55 percent) of first births to teenagers, represented either timing failures or unintended or unwanted births. Thus, of the total pregnancies to teenagers, only about 25 percent were intended, that is, wanted at that time. This study was conducted at a time when a large proportion of teenagers married. The proportion of pregnancies that could be considered intended has probably droped, but no recent research was available to address this question.

Initiating Contraceptive Use

What proportion of youth used a contraceptive method at first intercourse? Among those who did not use contraception at first intercourse, when did they begin using contraception? What methods were used at first intercourse among users? What methods did later initiators first use?

Table 2.1 shows that in 1979 almost half of all teen women reported that they used a contraceptive method at first intercourse. The percentage of teen women in 1982 who used a method at first intercourse is identical to that in 1979. There appears to have been no major shift between 1979 and 1982 in use at first intercourse. This represents a substantial improvement over 1976, when 40 percent of teen women said that they contracepted at first intercourse (Zelnik and Kantner, 1978).

The pattern of contraceptive use at first intercourse varies substantially by age at that time ((unpublished tabulations from the NSFG; Zelnik and Shah, 1983). Under a third of women and men who first had intercourse at under 15, half of those who first had intercourse at 15 to 17 and three-fifths of those who first had intercourse at age 18 or older used a contraceptive method at first intercourse. There is very little sex difference. The race difference is sharper; blacks are less likely than whites to have used a method at first intercourse.

However, in an analysis of the 1976 National Survey of Young Women, Zelnik and colleagues (1981) found that after adjusting for other differences between young women, in particular the age at first sex, current age, SES and family stability the race difference was not statistically significant. The difference in use of a contraceptive method at first sex by age at the time remained highly significant; women who were older at first intercourse were much more likely than women who were younger to have used a method at that time.

Mosher and Bachrach (1986) conducted a multivariate analysis on data from the 1982 National Survey of Family Growth. They found that, for women 15-44 in 1982, there was a substantial race difference in use of contraception at first intercourse--whites were much more likely than blacks to use a contraceptive method at that time. When they controlled for differences between blacks and whites in education of mother, year of first intercourse, ethnicity/religion, age at first intercourse and whether ever discussed menstrual cycle with a parent, that race difference declined slightly but did not disappear. This analysis differs from that of Zelnik et al. in that 1) it was not restricted to teenagers, and 2) it did not control for family stability or religiosity, which were included in the previous analysis. Thus we cannot draw any conclusions as to whether a change has occurred such that there is now a true race difference in contraceptive use at first intercourse net of other differences, where there was not one in 1976. An analysis comparable to that of Zelnik et al. (1981) should be conducted on the 1982 NSFG or other recent data.

Zelnik et al. (1981) focused primarily on the influence of background factors on use of contraception at first intercourse. A few relationships were significant, but overall the relationships were not very strong. Young women with better educated parents and in intact families were more likely to have contracepted at first intercourse. Surprisingly, women younger at the time of the survey were also more likely to have contracepted at first intercourse. Given that age at first intercourse is also controlled, this suggests that more recent cohorts of young women, particularly blacks, are more likely than early cohorts to use contraception at first intercourse.

What proportion of those who used a method at first intercourse used a prescription method--the pill, IUD or diaphragm? Use of such methods requires planning and a doctor or clinic visit. According to data from the 1979 National Survey of Young Women black teenagers are much more likely than white teenagers to report having used a prescription method at first intercourse: 41 percent compared to 15 percent of whites (Zelnik and Shah, 1983). Even when other factors are controlled, using the data from a similar 1976 survey, Zelnik et al. (1981) found the black-white differences to be large and statistically significant. Age at first intercourse continues to be important, with those older at first intercourse more likely to have used a medical method at that time. Again, only a few variables were associated with use of a prescription method, and the total proportion of variation in contraceptive use explained by these variables was very small.

This analysis of medical methods points out some of the pitfalls of relying on one analysis of contraceptive use. For example, the condom, which is not a medical method and was therefore not included in the analysis discussed above, is effective if used properly. Is an analysis, therefore, adequately measuring contraceptive use at first intercourse if condom use is ignored? Table 2.3 shows the distribution of contraception used at first intercourse among all sexually ex-

perienced respondents and among users only. Comparing black and white female users in 1979 (Table 2.3) we see that white women users relied heavily (three quarters to four-fifths) on a male method (condom and withdrawal); in contrast, half of black female users reported using female and half reported using male methods, with most of the female methods being prescription methods. The reports of white male users are very similar to those of white female users, with 7 out of 10 reporting use of a male method at first intercourse. However, the reports of black male users are very different from those of black female users. Of the former, 6 or 7 out of 10 say that they used a male method at first intercourse. Of course, there is no reason these figures have to be the same. In fact, the data suggest that the first partner is older and, therefore, probably already experienced. Data are similar for 1982 (Table 2.4), except that among users the use of female prescription methods at first intercourse appears to have declined among black female teens and the use of the condom has increased. Sample differences make this conclusion tenuous, however.

The planning status of first intercourse does appear to be related to use of contraception (Table 2.3). Young women who planned their first intercourse were more likely to have used contraceptive methods than those who didn't plan it, but the differences are small. Young men who planned their first intercourse were more likely to have used a male method.

Table 2.5 shows reasons respondents gave for not using a method at first intercourse. Under 5 percent said they wanted a pregnancy or didn't care; another small proportion thought pregnancy impossible. Almost 20 percent said they didn't know about contraception. The majority said it was unavailable, didn't think about it, or didn't want to use it.

Contraceptive Use in the First Six Months After Sexual Debut

Half of all initial premarital pregnancies occur in the first six months of sexual activity (Zabin et al., 1979), and more than one-fifth in the first month. Yet data show that teenagers delay coming to a clinic--the average delay is about 1 year after initiation of sexual activity. What is the pattern of contraception during the period?

Research on the sequence of contraceptive use from first intercourse is greatly needed. Table 2.1 shows the percentage distribution of premaritally sexually active women age 15-19 by contraceptive use status and race in 1982, 1979 and 1976. About one-third of the young women in 1979 reported using contraception at first intercourse and using it consistently thereafter. Fifteen percent contracepted at first intercourse, but not always, 25 percent did not use a method at first intercourse but did at some time afterwards, and 27 percent claim to have never used contraception. Since 1979 there has been an apparent decline in the proportion of teen women who never used con-

traception and an increase in the proportion who used it at sometime, although not at first intercourse.

Of course, Table 2.1 does not show us how long after first intercourse it takes to adopt contraception. Table 2.6 shows, for those who did not use a method at first intercourse, but who had ever used a method by the interview date in 1982, the length of time between first intercourse and first contraceptive use. It is clear that the older the age at first intercourse, the quicker a young woman adopts contraception. Twenty-two percent of those under 15 compared to 53 percent of those 18-19 at first intercourse adopted contraception within one month; 42 percent of the former and only 15 percent of the latter delayed more than one year. Among those who do not use contraception at first intercourse, blacks were consistently slower to adopt contraception than whites. This difference is smallest among the earliest initiators, and is surprisingly large among later initiators (although sample sizes are small). Since blacks were also less likely than whites to have used contraception at first intercourse, blacks appear to be at much higher risk than whites of a pregnancy at or soon after first intercourse. In 1976, on average those 15-17 year olds who did not use contraception at first intercourse did so within about 6 months (excluding those who did not use contraception by the time of the survey or prior to pregnancy or marriage). Among those teenagers visiting clinics, the average delay in 1980 was more than a year (Kisker, 1984). This figure understates the average delay since many (41.7 percent of all 15-19 year olds) used no contraception between first intercourse and either a pregnancy, marriage or the survey date. The most important reason young women gave for delaying a family planning visit to a clinic was that they simply didn't get around to it. Two other major reasons cited were "fear of family discovery" and "relationship with partner not close enough".

What factors would be expected to be related to contraceptive use at first intercourse? 1) correct perception of pregnancy risk and time in the month of greatest risk, 2) motivation to avoid pregnancy. So far there has been little attempt to measure these concepts and test their association with contraceptive use at first intercourse or relationship to contraceptive adoption soon after. Table 2.10 shows that sexually inexperienced women are less likely than experienced women to correctly perceive the time of greatest pregnancy risk in the menstrual cycle.

There is very little work on adoption of contraception after first intercourse--either the process or the types of methods used. Very little research has even categorized young women by length of time since first intercourse. Research to sort out this process, preferably using a life table methodology, is needed.

Contraceptive Continuation

For this review three aspects of contraceptive continuation are important: 1) whether currently using, 2) regularity of use and 3) effectiveness of method.

Current Contraceptive Use

Probably the most common measures are 1) whether used a contraceptive method at last intercourse, and 2) whether currently using a contraceptive method. The reference point for the second measure is usually specified as during the last month or last 4 weeks preceding the survey and is specified as among those sexually active. Some analysts, in addition, eliminate those who cannot become pregnant and those who are trying to become pregnant. Some studies utilize the first and others utilize the second measure. Comparisons of the results obtained (for example, Tanfer and Horn, 1985) show that the distributions are very similar. So it makes sense to consider these two together.

There was substantial improvement in current contraceptive use between 1971 and 1982. Slightly under half of all women 15-19 used a method at last intercourse in 1971; close to 2/3 of all teens used a method at last intercourse in 1976 (Zelnik and Kantner, 1977). 1982 data show that 71 percent of teens exposed to the risk of an unwanted pregnancy are currently practicing contraception (Bachrach, 1984). In 1971 black teenagers appeared to bé similar to whites in contraceptive practice. When other factors were controlled, such as differences in socioeconomic status and in family structure, no significant difference between blacks and whites in use at last intercourse remained (Zelnik et al., 1981).

One of the most important factors associated with currently using contraception are current age and length of time sexually active. Zelnik et al. (1981) controlled simultaneously for current age and for age at first intercourse. Thus age at first intercourse really represents length of time since first intercourse. Of two young women with similar ages, the one who became sexually active earlier has been active longer. Zelnik et al. (1981) found that women who were older at first intercourse (and therefore had been sexually active less time) were more likely to contracept at last intercourse. Using the same data set, Devaney and Hubley (1981) found current age but not age at first intercourse to be associated with contraceptive use. That is, older teens were more likely to be contracepting at last intercourse than younger teens. The Devaney and Hubley study included a larger set of control variables, which may explain the difference in findings.

Studies using the National Survey of Young Women found frequency of intercourse (Devaney and Hubley, 1981) and number of partners (Zelnik et al., 1981) to be associated with use of contraception at

last intercourse. A women who was engaged to be married (Devaney and Hubley, 1981) and one who had been pregnant (Zelnik et al., 1981) were likely to be contracepting. A history of past use was associated with current use. Teens who contracepted at first intercourse (Zelnik et al., 1981) and those who had few unprotected months after first method use (Philliber et al., 1983) were more likely to be contracepting at last intercourse.

Family background and interpersonal factors contribute to use of birth control. Young women with better educated parents were more likely to be contracepting (Zelnik et al., 1981). A young woman in a family receiving welfare was less likely to have contracepted at last intercourse than a young women not in a family receiving welfare (Philliber et al., 1983). Living in group quarters was associated with greater use of contraception at last intercourse (Devaney and Hubley, 1981). Finally, Philliber et al. (1983) found that the more persons who knew about the teenager's birth control use the more likely she was to be contracepting at last intercourse.

One factor strongly associated with use of contraception at last intercourse is educational expectations. The higher the educational expectations, the more likely a young woman is to have used contraception at last intercourse (Devaney and Hubley, 1981), a relationship that holds for whites and blacks alike. This variable may be a proxy for motivation to prevent pregnancy.

Philliber et al. (1983) tested the Luker formulation of a decision-making model on youth attending a New York City youth center. Included in the model were a series of socioeconomic background characteristics as well as a series of variables measuring perceived advantages and disadvantages of pregnancy and perceived pregnancy risk. She found that using effective contraception at last intercourse was associated with a high score on the subjective probability of pregnancy, a low score on perceived advantages, a high score on perceived disadvantages of pregnancy, a low estimate of the probability of using abortion if pregnancy occurs, and a low rating of disadvantages of birth control. Those with a high level of ego development were also more likely to use effective contraception. Few background factors added significantly to the model. This research provides strong support for the value of a decision-making model. Further research should address the issue of the factors affecting individual perceptions of consequences and the ways these affect behavior that is, the mechanisms whereby background factors lead to differential contraceptive use.

Regularity of Contraceptive Use

Regularity of contraceptive use has been measured in a variety of ways. Flaherty and Marecek (1982) divided their sample into contraceptors versus non-contraceptors. The former reported use of contracep-

tion either always or usually, the latter reported rarely using contraception, and were using nothing at the time of interview. Poppen (1979) and Cvetkovich and Grote (1980) used two measures: 1) ever versus never had unprotected intercourse and 2) frequency of contraceptive use in the last three months (always, almost always, usually, sometimes, never), including all methods, even rhythm. Nathanson and Becker's definition of contraceptive use was the proportion of time subsequent to the baseline interview that a respondent at risk of pregnancy (sexually active and not pregnant) was using a medical method of contraception (mostly oral contraceptives) (Nathanson and Becker, 1985). Ager (1982) defined contraceptive non-use as 1) program discontinuance or 2) method discontinuance. The former refers to whether still in program or not; the latter refers to those not continuously practicing contraception, compared to those who were either continuously practicing effective contraception or were not at risk over the interval. Zelnik et al. (1981) divided women into two groups: ever and never users of contraception.

Unfortunately, except for Zelnik et al. (1981), none of these studies controlled for length of time since first intercourse, and only a few controlled for current age. Since these respondents are at all stages of sexual experience the results should be taken with caution. Zelnik et al. (1980) showed that both age at first intercourse and current age are related to frequency of contraceptive use. Net of current age, age at first intercourse measures length of time or duration since first intercourse. Results of their study show that the older the current age and the longer the time since first intercourse, the less likely a teenager is to have always contracepted. The former represents a cohort effect: older teens were born before younger teens; more recent cohorts appear to use contraception sooner than earlier cohorts. The latter represents pure length of exposure effect. The longer the period in which to have contracepted, the less likely the respondent is to have always contracepted.

In another study which controlled for background factors as well as characteristics of the respondent and current relationship and which used a different data set, Furstenberg (1983) did not find either duration of exposure to pregnancy risk or current age to be associated with contraceptive continuation (continuous contraceptive use over 15 months as measured by two different measures). This suggests that factors included by Furstenberg and not by Zelnik et al. (1981), such as parental employment, "steadiness" of the relationship, academic performance, school/employment status, and convenience of method, may explain the impact of current age and length of time since first intercourse on contraceptive continuation. However, this is purely speculation, since the research to test such an hypothesis has not been conducted.

None of the studies cited showed significant black-white differences in frequency of contraceptive use. Although one study suggested that sexually active blacks may be slightly more likely to have ever

contracepted (Devaney and Hubley, 1981), the evidence certainly is not sufficient to reject the conclusion that contraceptive regularity differs little by race.

Cvetkovich and Grote (1980) found that black males whose mothers have a high education use contraception more regularly; Zelnik et al. (1981) found a similar effect of parental education on the contraceptive use of black females. Flaherty and Maracek (1982) found that girls who talked with their mothers and cited the mother as a source of birth control information used contraception more regularly; however, she did not control for other differences between young women. Fox (1980) found a similar effect of maternal communication on daughters' contraceptive use, but it disappeared with controls for other factors such as socioeconomic background and family structure. Flaherty and Marecek (1982) found type of maternal discipline associated with frequency of contraceptive use. In particular, daughters who had experienced parental rules and punishments for violations and for whom restrictions of privileges were favored over corporal punishment for misbehavior were more likely to use contraception. Again, however, these researchers did not control for potentially confounding factors. Thus these results should be taken as suggestive, not definitive.

One important hypothesis is that young women who don't perceive opportunities other than motherhood open to them will be less motivated to prevent pregnancy than women who perceive better opportunities for jobs and careers. Nathanson and Becker (1983) found that black girls who perceived better opportunities for non-reproductive roles were more likely to be regular contraceptors than those who didn't. However, the association was weak for black teens and there was no association for white teens. They did find that the older the preferred marriage age, the greater the continuity of contraception among white and black teenagers (Nathanson and Becker, 1983).

Religion doesn't appear to be related to frequency of contraceptive use. Flaherty and Marecek (1982) showed a positive effect of religiosity in general. Devaney and Hubley (1981) found that blacks who said that religion was important to them were more likely to have ever-used contraception than others. In contrast, whites who said they attend church regularly were less likely to have ever-used contraception. Their particular religious affiliation was not associated with ever having used contraception. However, using the same data, Zelnik et al. (1981) did not find either religiosity or religion to be associated with ever having used contraception, net of other factors.

One study based on samples from two urban areas and one small town found that knowledge about sex and contraception were associated with greater frequency of contraceptive use among white males (Cvetkovich and Grote, 1980). Fear of side effects of contraception and perception of harmful effects of contraception were associated with less frequent use (Poppen, 1979; Cvetkovich and Grote, 1980). Self-esteem was associated with more frequent contraceptive use for both whites and blacks (Cvetkovich and Grote, 1980).

For a discussion of the effects of the clinics themselves on contraceptive use, see Programs and Policies, Chapter 9.

Contraceptive Effectiveness

The final measure of contraceptive continuation to be discussed is contraceptive effectiveness, that is, the level of effectiveness of the contraceptive method the women/couple used at last intercourse or is currently using. Effectiveness is measured by the failure rate. It is the proportion of women exposed to the risk of unintended pregnancy who would become pregnant if they used a given method and no other for one year. Measuring effectiveness therefore, requires a knowledge of method used and an estimation of its associated failure rate. There are several potential ways of measuring failure rate. The theoretical or biological failure rate is impossible to measure but is often approximated by the lowest failure rate measured among different population groups. The actual use effectiveness rate, in contrast, is the average failure rate for the group to which the individual belongs, which will be higher than that of the theoretical rate.

Table 2.11 shows use failure rates for unmarried women over the period 1979 to 1982, from the National Survey of Family Growth (Grady et al., 1986). Failure rates vary substantially by age, contraception method, duration of exposure, poverty ratio income, race, parity and contraceptive intention of the woman. In general failure rates are higher the younger the woman. Among those who intend to delay a birth, failure rates are highest for those 18-19 years old, not for those under 18. This is probably due to the fact that 18-19 year old single women have the highest frequency of intercourse (see Chapter 1). There was not enough information in the NSFG to control for frequency of intercourse. Among those who seek to prevent a birth entirely, failure rates are highest among those under age 18, and decline gradually to their lowest level among women 30-44. Surprisingly, failure rates are higher up to age 29 among women who seek to prevent an additional birth rather than those who seek to delay a birth. Grady et al. (1986) speculate that either 1) young women redefine their intentions at the time of conception after the fact, or 2) young single women who are preventing a pregnancy are doing so because they have already had one or more unwanted births. Those who intend to prevent at a young age may be ineffective users and high risk nonusers, while the older age groups would include many post married women who had successfully regulated their fertility. Black women have no higher risk of unintended pregnancy than women of other racial groups; the similarities are probably exaggerated since abortions are underreported more by black than white women. Women who have had children have higher failure rates than those who don't. Such women may be more fecund. Finally, failure rates are higher among women with lower incomes; those below the poverty level have the highest failure rate.

Grady et al. (1985) found that the failure rates for single women were somewhat lower than those for married women. They hypothesized that this difference was due to the fact that abortions were under-reported more by single than by married women. When they adjusted the use-failure rates to take into consideration this reporting difference, the use-failure rates for single and married women were more similar. Comparing single with married women, failure rates for the former are higher for the pill, lower for the condom and use of no methods. It is likely that the differential frequency of intercourse among married women explains their greater failure rates for the condom and no method, while greater inconsistency of pill use explains the greater failure rates of pill use among unmarried compared with married women. The lowest possible failure rates measured among different population groups are presented in Grady et al. (1986).

Although other factors, such as interpersonal relationships and contraceptive attitudes may also affect use effectiveness, no research has been conducted using such factors to distinguish effectiveness.

In practice, almost no one has simply taken these theoretical or use effectiveness scores and used them as a dependent variable. Contraceptives are generally rank ordered by effectiveness and then grouped into categories such as medical and non-medical or effective and non-effective. An example is that of Zelnik et al. (1981) who distinguished medical (prescription) from non-medical (non-prescription) methods. An example of research using effectiveness ratings as a dependent variable is that of Polit et al. (1981). The dependent variable "at risk to pregnancy" combines four types of information: a) the percentage of time that the couple used a method of birth control, b) the theoretical effectiveness of the methods used, c) the use-effectiveness of the methods used and d) assessments of how effectively this couple used their contraception. The final score ranged from 3 to 90, with 3 representing low risk (e.g., consistent users of the pill) and 90 representing highest risk of pregnancy (e.g., no birth control at all).

Current age and age at first intercourse predict use of effective contraception. Older teens are more likely to have used a medical method at last intercourse (Zelnik et al., 1981). The longer the duration of exposure to sexual activity (the younger the age at first intercourse) the more likely to have used a medical method. Young black women with better educated parents are more likely to have used a medical method at last intercourse (Zelnik et al., 1981). Net of other factors, blacks are more likely than whites to have used a medical method at last intercourse (Zelnik et al., 1981). Not listing a religion and not being religious are associated with a higher probability of using a medical method at last intercourse (Zelnik et al., 1981).

These authors also found that young women who have been pregnant are more likely to use a medical method at last intercourse (Zelnik et

al., 1981). In contrast, Polit et al. (1981) found that couples in which the female had been pregnant were less effective contraceptors.

Characteristics of the relationship are important predictors of effectiveness of contraception. The greater the number of partners, the more committed the relationship with the partner, and the more frequently intercourse occurs, the more effective the contraception (Thompson and Spanier, 1978; Herold, 1980; Zelnik et al., 1981). The greater the likelihood of couple continuity (boy's report) and the higher the communication rating, the more effective the contraception (Polit et al., 1981).

Attitudes toward sex and contraception have been found to affect the effectiveness of the contraception couples use. Herold (1980) found that teen females who have favorable attitudes toward contraception, a low level of embarrassment about contraception, and a low level of premarital sex guilt are more likely to use effective contraception.

Beliefs about who should have responsibility for birth control have also been found to be associated with more effective contraception. Polit et al., (1981) found that teen women who believe that the female should take responsibility for birth control tend to be more effective contraceptors. Although the same authors (Polit et al., 1981) hypothesized that males and females who were rated high on decision-making skills would be better contraceptors, in fact, she found no difference among females and that couples in which the male had good decision-making skills were less effective contraceptors. She concluded that, contrary to her hypotheses, contraception is more successful when one person, particularly the female, takes responsibility for it.

Some Methodological Issues

Presumably the reason that we are interested in measuring contraceptive use is that we want to know the risk of unwanted or unintended pregnancy that women incur. Thus it would seem important to validate these measures. To what extent do they measure what they purport to measure that is, pregnancy risk. Herold (1980) attempted to validate the different measures of contraceptive use by looking at their intercorrelation and by looking at the association of each variable with other potential determinants. He concluded that the weakest measure, that is, the one with fewest associations with other measures of contraceptive use and apparently with the most random variance, is whether a young women ever used any method at all. The strongest measures are those of effectiveness. Unfortunately, Herold did not explore which of these measures best predicts avoidance of pregnancy.

Two studies have explored the relationship between these measures and eventual pregnancy (Koenig and Zelnik, 1982; and Furstenberg et

al., 1983). Both studies show that women who claim to be using contraception consistently, that is, who always use a contraceptive method at intercourse, have a much lower likelihood of pregnancy than women who are not consistently using a contraceptive method, than women who are currently using a contraceptive method, and than women who have never used a contraceptive method. Distinguishing between medical and non-medical methods helped discriminate levels of pregnancy risk only slightly. Unfortunately, however, Furstenberg (1982) also discovered considerable inconsistency in respondents' reports of contraceptive use. Using a measure of consistency of use based on retrospective accounts 15 months after the initial survey, 73 percent of clinic patients surveyed were consistent users. However, there were substantial inconsistencies in reporting of use between the 6 month and the 15 month interviews. If those whose reports at the two time points are inconsistent are not included with consistent users, then the percent who are consistent users drops to 43 percent. The authors concluded that "Retrospective measures contain a large element of error because of the respondents' inability or unwillingness to recall past use accurately. Without more frequent interviews and a good deal of probing regarding inconsistent reponses, investigators are likely to exaggerate rates of contraceptive continuation" (Furstenberg et al., 1983:217).

Prediction of pregnancy was strongly affected by the measure of contraceptive continuation used (Furstenberg et al., 1983). The most refined measure, the measure that included prospective as well as retrospective reports of contraceptive use over a 15 month period, was the best predictor of pregnancy and was also best explained by a number of characteristics of adolescents; random error appeared to be minimized. The authors concluded that better measures of contraceptive use are needed before factors affecting that use can be identified and addressed.

Males

Very little contraceptive research has included males. Few national surveys have collected information on male contraceptive use among adults, let alone among teenagers. The only survey that included young men, the 1979 Zelnik-Kantner National Survey of Young Men, 17-21, has not been fully analyzed. The research there is suggests that knowledge about and attitudes toward birth control, as well as self-esteem, are very important to contraceptive use as reported by males (Cvetkovich and Grote, 1980). Unfortunately, knowledge is poor. In one study of teen males (Finkel and Finkel, 1975), fewer than one-half could correctly identify the time during the menstrual cycle when conception is likeliest to occur. Attitudes and knowledge of males toward contraception are also less than favorable. In her study of contraceptive decision-making in adolescent couples, Polit et al. (1981) found that, in general, men were less knowledgeable about specific contraceptives and had less favorable attitudes toward con-

traceptive use than women. In particular, more males than females thought oral contraceptives were dangerous. In spite of these findings, males do appear to use effective (male) methods at first intercourse (Table 2.5). They also appear to use male methods currently or at last/most recent intercourse, as reported by their partners (Table 2.8). No data are yet available on current use or use at last/most recent intercourse as reported by males.

Partners

Among adults, both partners have been found to have an independent contribution to the contraceptive decision; however, the important decision-maker is still the woman. In studies primarily of college students, Thompson and Spanier (1978) and Herold (1980) found partner influence very important in contraceptive use. Very little research, however, has been conducted using teenage couples. Polit (1983) found that the couples best protected against unwanted pregnancy were those in which one person, (usually the female) took charge. Luker (1975) found male partners to be perceived by women as frustrated and feeling relatively powerless in preventing pregnancy (p. 133):

> Men are socially cast into the role of passive spectators to contraceptive decision making by the same social and technological changes that structure the way in which women take risks. If both reponsibility and accountability are defied as exclusively female, men have neither the social means nor the personal motivation to take more active interest.

However, her sample was comprised of women seeking abortion; the feelings and perception of male frustration and powerlessness are likely to be heightened in this sample.

Polit et al. (1981) found that the agreement between partners' responses to questions about contraceptive practice ranged from 60 to 90 percent, the correlations between responses ranged from .18 to .90. These results suggest substantial variation between teen partners' reports of contraceptive use.

Experience with Contraceptives

It could be expected that individuals' experience with contraception would affect subsequent behavior. It has been hypothesized, for example, that perceived/experienced side effects of the pill (as well as adverse publicity) resulted in the apparent decline in pill use between 1976 and 1979 among teenagers (see Table 2.8), and its resurgence between 1979 and 1982 may be due to more recent reports that show very low risks for teenagers and some positive effects, such as protection from some cancers. As important as side effects are, only one project has studied reported side effects and contraceptive use

(Mindick and Oskamp, 1980). This study could not adequately test the association because the authors did not statistically correlate the reported side effects with reports of actual contraceptive use, but, rather, the likelihood that a relationship between side effects and unwanted pregnancy or clinic discontinuation existed was rated by project personnel based on clinic records, and these ratings were then used as a dependent variable for analysis.

SUMMARY AND CONCLUSIONS

This review has been organized around a rational decision-making model of contraception, in which the proximate determinants are frequency of intercourse, perceived probability of pregnancy, willingness to use abortion as backup if pregnancy occurs, positive advantages and disadvantages of pregnancy and contraception, and positive and negative experience with contraception. Although research is still relatively scarce in this area, what there is supports the importance of such factors in distinguishing degree of contraceptive use. The family appears to have little influence on contraceptive use; few studies have examined peer influence. Societal influence may operate through accessibility and availability. A recent study suggests that broader societal attitudes and values re sex and contraception may also affect contraceptive use (Jones et al., 1985); no other research was identified on this issue.

In this review contraceptive use was divided into two major areas of substantive interest: initiating use and continuing use. There is very little research on contraceptive use at first intercourse; only two studies deal with the process of initiating contraceptive use after first intercourse (Koenig and Zelnik, 1982; Zabin et al., 1979). Initiating contracepive use is heavily influenced by the age of the young woman at the time. The younger the woman the less likely to have used contraception at first intercourse and the longer the delay before initiating use. In addition, recent birth cohorts of women appear to be more likely to use contraception at first intercourse than early cohorts. There are no race differences in contraception at first intercourse, once other factors such as socioeconomic status are controlled.

Background factors had only weak influences on the initiation of contraception. Young women with better educated parents and in intact families were more likely to have contracepted at first intercourse. Black women are more likely to have reported using a medical method at first intercourse. Women who planned their first intercourse were more likely to have used a contraceptive method than those who didn't plan it.

There is substantially more work looking at contraceptive continuation, current use of contraception, regularity of use, and effectiveness of use. There is some evidence that those who become sexually

active at a young age are less likely to be currently contracepting, less likely to have always contracepted, but more likely to be using a medical method currently. Frequency of intercourse and being engaged to be married are associated with a higher likelihood of contracepting at last intercourse and with more effective contraception.

Women who perceived a greater probability of pregnancy, more disadvantages and fewer advantages of pregnancy, more advantages of birth control and who were less likely to say that they would resort to abortion if they became pregnant were more likely to report having used contraception at last intercourse and to report having used effective methods.

One small scale study found knowledge about sex and contraception to be associated with greater frequency of contraceptive use among males and females. The relationship between previous pregnancy and contraceptive use is not clear as one study found such young women to be more likely to use a medical method and the other found such young women less effective contraceptors.

One of the most important problems in studying contraception is the appropriate measurement of contraceptive use. First, very little research has attempted to validate the various measures of contraceptive use standardly used. Second, the validation studies that have been conducted have found substantial inconsistencies in reports of contraceptive use. This is especially crucial for looking at consistency of use over time. The results of such studies suggest that one of the reasons reseachers have had so much trouble identifying factors associated with good or the contraceptive practice may be the poor reliability of the measures of contraceptive use. This is especially important for determining use effectiveness, which, at the present time, is based solely on individual reports of contraceptive use.

In conclusion, birth control use is largely a function of current age and age at first intercourse, relationship with partner, perceived risk of pregnancy, acceptance of abortion, attitudes toward contraception, desirability of pregnancy, and experience with contraception. It is only weakly related to knowledge about contraception. The family plays a relatively small part. Society may affect the availability and accessibility of contraception, which may affect contraceptive practice. The part peers play is not well known. Why some youth are effective contraceptors and others are not is still a little researched issue. Research suggests that women of all ages have trouble with contraception in actual use; teenagers differ only slightly from their 20-24 year old unmarried peers in practice. However, since their pregnancy rates also appear to be higher, how good our understanding is of actual contraceptive practice is in question. Nor do we know the full extent of differences in pregnancy or contraceptive failure rates by age.

This paper concludes with a list of important issues:

1. What is the process of becoming a user and a regular user? This issue has not been explored although it is extremely important.

2. How should contraceptive use be measured? More studies are needed to better measure actual contraceptive use.

3. What is the contribution of male partners to effective contraception? This is an important question but one that only a few investigators (Finkel and Finkel, 1975; Polit et al., 1981; Shea and Freeman, 1983; Shea et al., 1983; Cvetkovich and Grote, 1980) have explored.

4. Are there race/ethnic group differences in contraceptive practice? Although Zelnik et al. (1980) show distinct black-white differences in contraception at first intercourse, ever used contraception, and contraception at last intercourse, these differences disappear when background factors are controlled. There is no difference between blacks and whites in use at first or last intercourse or ever use, net of other factors. However, one difference does hold up. Black users are more likely to use a medical method at first and at last intercourse, probably due to greater clinic access for blacks. Blacks and whites do differ in types of methods used, with blacks more likely to use medical methods. Recent data suggest differential use effectiveness. Differences by ethnicity (e.g., Hispanic background) are small probably due to the fact that Hispanic teenagers are more likely than other teenagers to be married.

5. Is having been pregnant associated with better or poorer contraception? Zelnik et al. (1980) found that, net of other factors, a previously pregnant woman was more likely to use a method at last intercourse, and to use a medical method. Polit et al. (1981) in contrast, found that, net of other factors, a previously pregnant woman was a less effective contraceptor, measured in terms of effectiveness of current contraception.

6. Do actual or perceived opportunities and alternatives affect contraceptive use? It is commonly hypothesized that they do; however, very little research has been conducted on this issue. The research that has been conducted shows little support for the hypothesis.

CHAPTER 4

TEENAGE PREGNANCY AND ITS RESOLUTION

Sandra L. Hofferth

One major source of confusion in the literature dealing with teen pregnancy and childbearing is precisely the distinction between pregnancy and its outcomes. People often say they're referring to teenage pregnancy when they only have information on births. Pregnancy can be resolved in a number of ways, only one of which is a live birth kept by the mother. However, in talking about the problems of teen pregnancy, the problems that have been well-documented to date are those associated with that one outcome--bearing and raising a child as a teenager. Another set of confusions revolves around the process which leads ultimately to childbearing and its implications for policy and programs. For example, an agency may be interested in developing a profile of young women at risk of teen childbearing to target them for intervention. As discussed in earlier chapters, in order to become a teen mother, a young woman must first become sexually active, next, not use contraception or fail in its use in some way (including experiencing method failure), and, finally, once pregnant, decide to bear and raise the child herself. There are several points at which alternatives present themselves. Some teens choose one way, others choose another. Thus the agency has several possible points at which to target its interventions: at initiation of sexual activity, at contraceptive use, or, at the resolution of a pregnancy.

In this chapter some basic demographic description of the number and rates of teen pregnancies, births and abortions are first presented for the United States. Comparisons are drawn with Denmark, a country with registers of health events. Statistics showing the actual way pregnancies to U.S. teens are resolved are presented, followed by a discussion of research that sheds light on the factors associated with resolving a pregnancy one way rather than another. A summary and conclusions section closes the chapter.

BACKGROUND

In 1984 there were 469,682 births to teenagers 15 to 19, 9,965 births to teens under 15. This represents a considerable decline in births to teens over the decade, from a high of 656,000 in 1970. The

number of pregnancies rose slightly until 1980 and has declined slightly since then. There were over a million pregnancies to teens in 1984 (Table 3.1).

However, the change in the absolute numbers of births and pregnancies does not adequately indicate the incidence of teen pregnancy and childbearing because it does not take into account changes in the number of teen women. The number of teens rose during the 1970s, leveling off in the mid 1970s and declining since 1979. Nor does it take into consideration the number of women at risk, that is, the number of women who are sexually active (see Hofferth et al., 1986). This is especially important for teenagers, only a portion of whom are sexually active. Pregnancy rates[1] per 1000 women 15 to 19 rose 9 per- cent between 1974 and 1984; however, because the proportion who were sexually active also rose over the period, the pregnancy rates per 1000 sexually active women 15 to 19 actually fell 8.7 percent between 1974 and 1984.

What does this mean for individual women? The pregnancy rate in 1984 was 231 per 1000 sexually active women. This means that in 1984, 23 percent of sexually active teenagers would have become pregnant. This figure, however, only indicates the proportion of teens who would become pregnant in any one year. A more interesting figure is the proportion of young women who would ever become pregnant before reaching age 20. That is, what is the chance that a young woman would become pregnant as a teenager? Although this probability has been estimated using survey data, since abortions are underestimated in such data, the estimates of pregnancy will be low. Better estimates are obtained from reporting data such as those collected by the Centers for Disease Control and the Alan Guttmacher Institute. Based on such data it was estimated that in 1981 about 44 percent of young women will become pregnant before reaching age 20, 40 percent of white and 63 percent of black women (Forrest, 1986; Table 3.3).

Of course, this estimate, too, is rather crude, since among those young women are some who became sexually active very early in their teens, others who became sexually active very late and others who were still virgins at age 20. The data that are most helpful in showing what the actual risk of pregnancy is among those who are sexually active, breaks the probability down by the length of time since first intercourse and uses a life table methodology to estimate the risk of conception within the first two years after first intercourse (Zabin, 1979; Koenig and Zelnik, 1982). Data collected in 1976 (Zabin, 1979) indicate that within the first three months 9 percent of white and 14 percent of black teenage women will have experienced a first premarital pregnancy (Table 3.7). By the end of the first year that figure has risen to 17 percent for whites and 27 percent for blacks, and by the end of two years, 30 percent of whites and 37 percent of black teenagers will have experienced a first premarital pregnancy. Data from 1979 (Koenig and Zelnik, 1982) suggest a slight increase in the probability of pregnancy during the first two years after first intercourse between 1976 and 1979, with 33 percent of white teenagers and 43 percent of black teenagers experiencing a first premarital pregnancy with-

in two years after first intercourse (Table 3.5). The probability of a first pregnancy is strongly affected by two factors--the age at first intercourse and the use of contraception (Tables 4.6 and 4.8). Pregnancy rates are much for those older at first intercourse and for those who always used a contraceptive method. There was little difference in pregnancy between those who used a prescription and non-prescription methods, as long as they always used it (Koenig and Zelnik, 1982).

THE RESOLUTION OF TEEN PREGNANCIES

What happens to these one million teenage pregnancies? Many more young women under 20 become pregnant than bear a child, almost twice as many. In 1982 the total births to teenagers 15 to 19 represented 47 percent of the total number of pregnancies (abortions plus births plus miscarriages [Table 3.1]).

Table 3.2 shows how pregnancies in 1982 were divided: 40 percent of the pregnancies were aborted, and 13 percent miscarried; thus slightly under half, 47 percent, resulted in a live birth. The 47 percent which were live births are divided as follows: 13 percent were postmaritally conceived births, 11 percent were premaritally conceived but born postmaritally, and 23 percent were born out-of-wedlock (estimates from Table 3.1 and O'Connell and Rogers, 1984).

The resolutions to a premarital pregnancy considered here are abortion versus having a live birth, marriage versus non-marriage, and adoption versus keeping the child.

Live Birth versus Abortion

The proportion of teenage pregnancies that ended in a live birth decreased over the past decade (Table 3.1). The number of teen pregnancies has risen, but because the number of abortions has risen even faster, the number of births has been declining. Both the number of abortions and the abortion rate increased by 50 percent between 1974 and 1980. The percent of teenage pregnancies terminated by abortions climbed rapidly, increasing from 27 percent to 40 percent between 1974 and 1980. Since 1980, the abortion rate and ratio have remained level. Birth rates for all women have remained fairly level; rates for those sexually active have declined. (Table 3.1).

Of course, it is difficult to interpret these figures without some comparison. What is a high level of pregnancy, of births, of abortions for teenagers? Unfortunately, there are only limited international data on abortions, especially by age of the woman. The United States has a high abortion rate for young women compared to western European countries (Jones et al., 1985; Henshaw and O'Reilly, 1983). The United States also leads in the percent of abortions to teenagers (Tietze, 1983; Bachu, 1983). In spite of the large number of abortions, births to United States teens are also high, relative to other countries (AGI, 1981; Jones et al., 1985).

Denmark is a good country with which to compare the United States. Levels of sexual activity among teenagers are actually higher in Denmark than in the U.S. (Rasmussen and David, 1981). Abortion laws were liberalized there about the same time as in the United States--the early 1970s. Most important, Denmark has an excellent abortion reporting system. With a unique identifying number for each person and a centralized information gathering system, the data on abortion in Denmark are among the most complete in any nation.

Pregnancy rates in the United States have been about twice the level of Denmark for the past decade (David et al., 1982; Table 3.1). In both countries the pregnancy rates increased initially after liberalization of abortion, but levels in Denmark returned to those prior to liberalization, while those in the United States continued to rise. As a result, rates of abortions and births in the U.S. in 1980 and 1981 are considerably higher than in 1970. Abortion rates in both countries rose. However, while they have leveled off in Denmark, they have continued to rise in the United States.

The rapid increase in pregnancy and abortion rates in the U.S. during the 1970s was due to the rapid increase in sexual activity over the same period. Apparently, levels of sexual activity rose dramatically in Denmark during the 1960s (Rasmussen and David, 1981); thus by the time abortion was legalized in both countries, sexual activity had begun to level off in Denmark at a higher level. In contrast, the major increase in sexual activity in the U.S. occurred during the 1970s, with a leveling off during the early 1980s (see discussion, Chapter 1). As Table 3.1 showed, pregnancy rates among those sexually active actually showed a decline between 1974 and 1984.

Two valuable lessons from these data and from a recent study of five western European nations (Jones et al., 1986) are that 1) high levels of sexual activity do not necessarily result in high pregnancy rates, given adequate use of contraception, and 2) low birth rates do not necessarily imply high abortion rates; they may simply imply low pregnancy rates. Low abortion rates and low birth rates are compatible.

Among teens, the proportion of pregnancies terminated by abortion is higher in Denmark than in the United States, primarily due to the high abortion ratio among 15 to 17 year old Danes (David et al., 1982). 15 to 17 year old United States teens are much more likely to bear their babies than Danish 15 to 17 year olds. Jones et al. (1985) also found that in each of 5 developed nations they investigated, that 15-17 year olds were much more likely to abort a pregnancy than 18-19 year olds: the difference was smallest in the U.S. This suggests substantial differences between United States and other countries in choice of resolution for unplanned pregnancies, differences which will be pursued a little later.

Marriage

One way of resolving an out-of-wedlock teenage pregnancy is by marrying. So far all teenage pregnancies have been lumped together.

In fact, some 13 percent of all teenage births are postmaritally conceived (Table 3.2), and such births are not generally considered to be problematic. In 1980 only 5 percent of abortions to teens 15 to 19 (about 2 percent of all pregnancies) were to married women (Henshaw et al., 1985). Assuming that abortions indicate that a pregnancy was unintended, it can be inferred that most pregnancies to married women are intended. Zelnik (1979) found that 53 percent of first births to women who were married were unintended. If to the proportion of postmarital births are added a proportion of the miscarriages and a small proportion of the abortions, it can be seen that that between 15 and 20 percent of all pregnancies to women under 20 occur to married women. The remainder, 80 to 85 percent, are premarital pregnancies.

Earlier, it was pointed out that about 24 percent of sexually active teenagers age 14 become pregnant each year. However, this does not tell us how many teenagers age 14 become pregnant before they reach 20 or marry. According to 1979 survey data (Zelnik and Kantner, 1980), 16 percent of all metro teenage women 15 to 19 had ever experienced a premarital pregnancy, double that of 1971. Of those sexually active, 33 percent had ever experienced a premarital pregnancy, a small increase since 1971. Thus, when control is introduced for the increase in sexual activity over the decade of the 1970's, the incidence of premarital pregnancy has not changed very much. The major reason for the large apparent increase in premarital pregnancy is the increase in sexual activity. There was an increase in premarital pregnancy among sexually active white teens, but not among black teens. The lack of increase among blacks is probably due to underreporting of abortion. Thus premarital pregnancy has increased, but not as much among those sexually active as it appears from the increase in the population of teenagers. Data from the 1982 National Survey of Family Growth show a slight decline in premarital pregnancy among teenagers between 1979 and 1982, although the difference is probably not statistically significant. In 1982 14 percent of all teen women 15 to 19 had ever experienced a premarital pregnancy, compared with 16 percent in 1979. Of those premaritally sexually active, 30 percent experienced a premarital pregnancy.

These figures substantially underestimate the true proportion of teenagers who become pregnant before they reach age 20 or marry because abortions are substantially underreported in surveys--by as much as 50 percent. Some subgroups report more accurately than other subgroups (Mosher, 1985). Unmarried black teenage females are the least likely to accurately report their abortions, with unmarried white teenage females only slightly more accurate. Older married white females are the most accurate reporters of their own abortions. Since accurate pregnancy estimates depend on accurate abortion reports, the reports of pregnancy obtained from surveys will be lower than those estimated on the basis of nationally collected data from organizations such as the Centers for Disease Control and the Alan Guttmacher Institute. Recent calculations from the latter (Forrest, 1986; Table 3.3) suggest that based on 1981 data about 40 percent of white teenagers 15-19 and 63 percent of black teenagers would experience a first pregnancy before reaching age 20.

The increase in premarital pregnancy over the decade of the 1970s was not due to an increased wantedness of pregnancy. Table 3.6 shows that the proportion of premaritally pregnant teens who were unmarried at resolution who wanted the pregnancy actually declined between 1971 and 1979 for whites and blacks alike, and the proportion using contraception increased (Zelnik and Kantner, 1980; Table 4.4). Of course, premaritally conceived but marital births, which constitute about 11 percent of teen pregnancies, are excluded here. However, since the proportion who marry to resolve a premarital pregnancy also declined, the proportion who wanted a pregnancy probably also declined for all premaritally pregnant teen women.

Contraceptive use generally improved between 1971 and 1982. A smaller proportion reported never using contraception, a higher proportion reported always using it. A larger proportion used contraception at first intercourse and at last intercourse in 1982 than in 1971. Unfortunately, Table 3.4 shows that the percentage of premaritally sexually active teen women who ever experienced a premarital first pregnancy rose in all contraceptive use statuses 1976-79, except for those who used contraception at first intercourse but not always (Zelnik and Kantner, 1980). The largest increase was among never users, but increases also occurred among those who always used contraception. The authors attribute this increase in pregnancy, particularly among the youngest teens, to sharply increased frequency of intercourse and to decreased reliance on the most effective methods of contraception (Koenig and Zelnik, 1982). Data are not yet available from the 1982 NSFG to see whether pregnancy rates continued to increase among contraceptive users as well as non-users. We suspect they have not, since pregnancy rates have been declining.

Adoption

Data from three surveys of young women (Bachrach, 1985) show that the proportion of teenage women whose first pregnancy ended in a first premarital birth and who gave their baby up for adoption declined in the 1970s between 1971 and 1976 and leveled off at a low level between 1976 and 1982 (Table 8.1). Eighteen percent of white teenagers reported having terminated parental rights in 1971, 2 percent of blacks. By 1976 only 7.0 of whites and no blacks reported having given up a baby for adoption. By 1982 7.4 percent of whites and fewer than 1 percent of blacks reported having given up a child for adoption. Based on data from the National Survey of Family Growth, the estimated annual number of unrelated adoptions declined to a low in 1976 and has been gradually increasing since then.

Agency data support survey evidence which showed declining adoption placements from the early to the mid-1970s (Bachrach, 1985). Legal abortion became an alternative to adoption for many young women who had an unintended pregnancy and who would have adopted if abortion were not available. It has been argued that the reduced social stigma attached to unwed pregnancy caused a shift away from adoption as an alternative

to childbirth. The subsequent apparent increase in adoption may be a response to the substantial demand for babies to adopt as well as a response to the many concerns about the ethics of abortion. This is just speculation, since there is no research that would allow us to shed light on these changes. Just documenting the changes that have occurred is a difficult task.

RESEARCH

Factors Associated with Resolution of Premarital Teen Pregnancies: Delivering the Baby

Once a teenager is pregnant, what factors are associated with whether she has an abortion or carries the pregnancy to term and delivers the baby? One study found that the younger the teen at conception, the more likely she was to carry the pregnancy to term (Zelnik et al., 1981). In this study 13 to 16 year olds were more likely to have a live birth compared with 17 to 19 year olds comparable on other factors. This is supported by data from another study, which found that of those 13 to 19, the 16 to 17 year olds were most likely to have a live birth. However, national statistics on abortion ratios do not support these findings. The true explanation may be the underreporting of abortions in sample surveys of teenagers, which is likely to be most serious for the younger teens. An underreporting of abortions would increase the apparent proportion who carry pregnancies to term. Thus, due to underreporting of abortion, it is not clear whether factors are related to choice of abortion or birth or to whether abortion is reported. This is a serious problem for analytic study of abortion using sample surveys.

The birth year of the teenager is important. At a given age, earlier birth cohorts are more likely than more recent cohorts to have a live birth (Zelnik et al., 1981).

Young women are more likely than in the past to resolve a premarital pregnancy by abortion (Table 4.5). White teenagers were 1.3 times and black teenagers 2.5 times more likely to have an induced abortion in 1978 than in 1972. Although in the early 1970s black teenagers had a lower likelihood of using abortion to resolve pregnancy, according to these abortion ratios, after 1974 the abortion ratios are similar or slightly higher for blacks than whites. Since abortion data appear to be underreported more for blacks (Zelnik and Kantner, 1980), the difference in levels between blacks and whites may be underestimated. The abortion ratio appears to have levelled off after 1980, according to national figures (Table 3.1).

The black-white difference in likelihood of abortion varies by age. Among young teenagers the ratio of abortions to births is lower for blacks than whites (Table 4.6). However, this difference declines such that ratios are similar for 19 year olds. Among older women, ratios are higher for blacks than for whites.

One source of difference is the age at which abortions and pregnancies are measured. The Ezzard et al. (1982) study (Table 4.5) adjusted age to age at conception. This is particularly important at younger ages. Only a third of women who became pregnant before age 15 were still under 15 at delivery, while three-fourths of those obtaining abortion were still under 15 at the time of abortion (Henshaw et al., 1985). Thus differences between the figures will be sharpest at youngest ages.

Zelnik et al. (1981) found that the more religious a young women, the more likely she is, once pregnant, to bear the child. Another study using data from a small study of health providers in Ventura County California found white Catholics to be less likely to have a live birth, once pregnant than either white non-Catholics or Hispanic Catholics (Eisen et al., 1983). Thus the particular religious affiliation appears less important in the decision than the strength of religious conviction.

Teens living in the East or North central United States or in an urban area are more likely to have a live birth, once pregnant, than those in other regions or in non-urban areas (Zelnik et al., 1980).

The most important family factor associated with delivering a baby versus aborting a pregnancy is parental education. The higher the education of parents, the lower the likelihood that a teenager, once pregnant, will have a live birth (Zelnik et al., 1980). The mother's opinion of abortion is important, with girls whose mothers are more favorably disposed toward abortion less likely to have a live birth (Eisen et al., 1983).

Peer environment is important. The more positive a likely a young pregnant girl is to have a live birth (Eisen et al., 1983). In addition, girls who know a single teen mother are more likely to have a live birth (Eisen et al., 1983).

Among the most important factors affecting the outcome of the pregnancy was whether the pregnancy was wanted. Girls who said they wanted the pregnancy were much more likely to have a live birth than those who didn't (Zelnik et al., 1980). Of course, this measure of wantedness was obtained after the resolution of the pregnancy; ex-post facto rationalization may be measured here.

Beliefs about abortion and birth are important. Having favorable attitudes toward and beliefs about abortion prior to the event were associated with a lower probability of having a live birth (Eisen et al., 1983) and with a positive abortion intention (Smetana and Adler, 1979). Intention to have an abortion was associated with a lower probability of having a live birth (Smetana and Adler, 1979). Positive beliefs about having a child were associated with a low intention to have an abortion. Finally, women choosing either abortion or birth believed others wanted them to follow this alternative, with women intending abortion most motivated to comply with friends' expectations (Smetana and Adler, 1979).

Among the most important factors associated with choice of pregnancy resolution are expectations and academic achievement. High school dropouts and those not enrolled in school, those with a low grade point average, and those with low educational expectations have been found more likely, once pregnant, to have a live birth (Eisen et al., 1983; Leibowitz et al., 1980; Devaney and Hubley, 1981).

Two studies have looked at the relationship between receipt of AFDC and pregnancy resolution decision. Moore and Caldwell looked at the probability of abortion, marriage and out-of-wedlock birth among premaritally pregnant U.S. women aged 15 to 19 in 1971, data collected by Kantner and Zelnik in the National Survey of Young Women. Controlling for a number of individual characteristics, such as education of the father, wantedness of pregnancy, importance of religion and race, they found the probability of abortion to be significantly lower in states having relatively generous AFDC benefit levels (Moore and Caldwell, 1977).

Eisen et al. (1983) and Leibowitz et al. (1980) examined a group of 299 pregnant teenagers who went to health providers in Ventura County, California between 1972 and 1974 for assistance in terminating a pregnancy or for prenatal care. The teens were interviewed twice, once prior to abortion or delivery and a second time six months after the resolution of the pregnancy. The authors hypothesized that young women who received state support would be more likely to choose delivery than girls who were self-supporting. They found that both receiving financial aid from the family and receiving financial aid from the state (AFDC) were associated with choosing delivery (Eisen et al., 1983; Leibowitz et al., 1980). However, more young women than those currently living in welfare families would be eligible for welfare if they did give birth; thus the study really measures the effect of actual receipt of welfare benefits, rather than their availability.

Factors Associated with Marriage Before Birth (Legitimation)

Young women are less likely now than in the past to resolve a premarital pregnancy by marrying. The proportion of women pregnant before marriage who resolved a premarital pregnancy by marrying dropped by 50 percent between 1971 and 1979 for both whites and blacks (Zelnik and Kantner, 1980). The data show very little additional change between 1979 and 1982, although the data are not completely comparable, and the total number of pregnancies is underreported (Horn, 1985).

If we look only at pregnancies that end in a live birth, we see that of the total first births to white and black teenagers, the proportion conceived outside of marriage has risen, and the proportion premaritally conceived but legitimated before birth rose then declined to about the same initial level (O'Connell and Rogers, 1985). As a result, the proportion born out of wedlock rose sharply.

Two studies have examined factors associated with whether a premaritally pregnant teenager who subsequently had a birth married prior

to that birth: Zelnik et al. (1981) used data from the National Survey of Young Women in 1971 and 1976. They found that (among those who were premaritally pregnant and gave birth) white teenagers, those from a higher socioeconomic status background and those who wanted the baby were more likely to marry before bearing the child. The second study used the data from Ventura County, California (Eisen et al., 1983). They found that (among those who carried to term) the only factor that discriminated between those who married before the birth and those who didn't was whether the family had been receiving financial aid from the state. Those girls whose families had been receiving financial aid from the state during pregnancy were less likely to marry than those who had not been receiving such assistance (Eisen et al., 1983).

Factors Associated with Bearing an Out-of-Wedlock Child

The resolution many people are interested in is that of bearing a child out-of-wedlock compared with all other options. The previous analyses have explored the decisions in temporal sequence: that is, they have looked at, first, the decision to abort or carry a premarital pregnancy to term, and, second, the decision to marry or not marry before birth among those who carry to term. Several analyses have studied this decision as a joint one with three choices: 1) abortion, 2) marriage and birth, and 3) bearing an out-of-wedlock child. The results of studies viewing the decision this way do not differ from the results of studies using paired comparisons only, but this approach allows simultaneous comparison among all alternative resolutions. Young women who are black, who live in a metropolitan area, whose parents are of low educational levels, who are young at first conception, and who live in a large family are more likely to bear a child out-of-wedlock than to either abort or marry (Eisen et al., 1983; Leibowitz et al., 1980; Devaney and Hubley, 1981; Zelnik et al., 1980). In addition, Leibowitz et al., 1980 and Eisen et al., 1983 found teens living in families receiving financial aid from the state to be more likely than their peers to bear an out-of-wedlock child. In contrast, using 1971 data from the National Survey of Young Women, Moore and Caldwell (1977) found no relationship between level of AFDC benefits and having an out-of-wedlock birth. The latter found a negative relationship between AFDC acceptance rates and the probability of having an out-of-wedlock birth. That is, young women in states with high acceptance rates were less likely to have an out-of-wedlock birth (Moore and Caldwell, 1977). There was no significant association between AFDC benefit levels and acceptance rates and the probability of marrying before the birth (Moore and Caldwell, 1977).

Adoption

Only a few studies have compared teens who have made adoption plans with teens who have kept and parented their children. These are summarized in Resnick (1984). The results suggest that teenagers who make adoption plans are similar to those who have abortions but different from those who take on parenting responsibilities. The former tend to

be older, to have more parental influence and less male partner influence, and to be of higher socioeconomic status. Parenting teens tend to be younger, to have less schooling, to not be attending school and to come from non-intact homes. Thus those who make adoption plans tend to have more prospects for the future. In addition, they were reared in smaller towns and cities and have more traditional attitudes about abortion and family life (Resnick, 1984).

Recent data from the 1982 National Survey of Family Growth (Bachrach, 1985) show that teenagers under 18, whose parents have had some college, whose baby was born before 1973, and who were living with both parents at age 14 were more likely than other teenagers to place the child for adoption if they had a premarital birth.

Two recent studies (Kallen, 1984; Resnick, 1984) are funded by the Office of Adolescent Pregnancy Programs to look more closely at the factors affecting the decision of unmarried pregnant teens to make an adoption plan. At this writing no results are yet available.

Factors Associated with Decision Satisfaction

It is obvious that no one decision is the "right" decision for all adolescents, since the circumstances differ among individuals. However, researchers have found some regularities in the extent to which individuals express satisfaction or dissatisfaction about the decisions they have made in resolving their pregnancies. A study of a Danish sample found that the degree of satisfaction with the decision depended on the firmness of the decision in the first place. Of those who had made a firm decision to abort soon after learning about pregnancy, 94 percent said that the decision was correct 6 months later. Of those who were not so certain, 72 percent said that the decision was correct 6 months later (David et al., 1982). Of those whose decision was firm, 59 percent experienced relief afterward, compared with 28 percent of the less firm. None of the Danish women expressed feeling of guilt over the decision.

A study of United States teen women (Rosen, 1983) found that the more alternatives considered, the greater the dissatisfaction with the decision. This probably reflects greater uncertainty as to what to do, and is consistent results from the Danish study (David et al., 1982).

The Eisen and Zellman (1984) study of pregnant teens in Ventura County, California found no significant difference in decision satisfaction 6 months after pregnancy resolution by type of decision made, age or ethnic group. Nearly all--80 percent--expressed satisfaction in their decision. There were some differences in degree of satisfaction depending on the decision made. Among teenagers who chose abortion, those with better educated mothers, who had advocated abortion for themselves, who were more approving of abortion in general and who used contraception more consistently following abortion were more satisfied (Eisen and Zellman, 1984). Among teens who chose single motherhood, those not enrolled in formal schooling during the six

months after birth were more likely to be satisfied with the decision, as were those with maternal support for single parent status. Among teens who married, none of the variables utilized significantly differentiated those who were satisfied with their decision from those who weren't.

Interesting and Controversial Issues

Three issues are worth looking at further. The first issue is the relationship between age and pregnancy resolution. Young teenagers in the United States have a very high probability of bearing the child, once pregnant, compared to older teenagers or teenagers in other countries (Jones et al., 1985). Data from the Danish study (David et al., 1982) show abortion ratios (abortions divided by births plus abortions) to 15 to 17 year olds that are twice those of U.S. 15-17 year olds. Three-quarter of the pregnancies to young Danish teens are terminated by abortion, compared with 40 percent of those to young U.S. teens. Abortion ratios for 18 to 19 year olds are very similar in the U.S. and in Denmark. Results from the National Survey of Young women suggested that, net of other factors, girls younger at conception are more likely than older teens to carry a pregnancy to term. Although the differences are exaggerated because of the underreporting of abortion at younger ages, it could be expected that abortion would be higher at younger ages than at older ages, as shown by the Danish sample, since few young women wanted these pregnancies.

Thus the lack of difference by age in the United States is of interest. Why are 15 to 17 year old pregnant teens in the United States so much more likely to bear a child than comparable teens in a country such as Denmark and other countries? Why are they as likely to bear a child as their 18 to 19 year old peers in the U.S.?

The second important issue is that of race differences in pregnancy resolution. The chapter has emphasized differences between blacks and whites, but conclusions about race differences in pregnancy resolution based on analyses of survey data are of necessity weak because of differential reporting of abortion by race in those data sets. The best information on subgroup characteristics come from the Centers for Disease Control, AGI, and from the National Center for Health Statistics and they are good. However, such data do not provide the depth of information needed to explore causal factors in decision-making. Another problem is whether to use abortion rates or ratios. The abortion ratio is higher among blacks than whites for all ages except the teen years (Table 4.6). During the teen years, the ratio of induced terminations of pregnancy to live births is higher for whites than for blacks. However, if you look at the abortion rate (Table 4.4) the rate is higher for non-whites than for whites at all ages. This is because the pregnancy rate for non-whites is also higher. Thus, in this case, using the abortion rate would lead to a completely different and erroneous conclusion about black-white differences. Analysts need to choose the appropriate measure for their purposes.

One reason for the differences between blacks and whites in abortion is that blacks appear to use abortion for spacing or to end childbearing more than to postpone a first birth. Sixty-five percent of abortions to whites occurred to childless women, compared to 39 percent of abortions to blacks (Table 4.7).

However, there is another problem with the data. Figures are often based on age of the woman at pregnancy outcome. Since birth occurs nine months and abortion approximately 3 months after a conception, a proportion of the young women who conceived (and who eventually bore a child) at the same time as those who conceived and who eventually terminated the pregnancy through abortion would be one year older at outcome. Thus the event (pregnancy) occurred at the same age, but this would not be reflected in the statistics. Adjusting the data to age at conception would take care of this problem, but would also alter the number of births and abortions, especially at younger ages. Thus the Ezzard et al. (1982) study (Table 4.5) shows almost no black-white difference in abortion ratios when abortions and births are adjusted to age at conception. This raises an important issue of comparability of measures across studies. The Alan Guttmacher Institute has moved toward reporting ratios adjusted to age at conception. The other organizations that report abortion statistics do not yet do so (the Centers for Disease Control and the National Center for Health Statistics).

A third interesting issue is that of repeat abortion. In 1980 one-third of U.S. aborters had previously had an abortion (Tietze, 1978; Henshaw and O'Reilly, 1983: Table 7). The figure is smaller for teenagers, as could be expected, since they have not had as much time to have one, let alone two abortions. NCHS data suggest that 12 percent of abortions to 15 to 17 year olds, and 22 percent of abortions to 18 to 19 year olds are repeat abortions (Table 4.7). There are two potential reasons for concern. First, there may be negative effects of abortion on later childbearing and subsequent pregnancies. Second, there may be (over)utilization of abortion as substitute for contraception.

Are there negative effects of abortion on later childbearing and subsequent pregnancies? This literature has been reviewed in Strobino (in this volume) and Hogue (1982); the reader is referred to those sources. After adjusting for the fact that abortions performed on teenagers are performed later in pregnancy, which is somewhat more risky, rates of mortality and morbidity from abortion are somewhat lower for teenagers than for adult women. There is only one instance in which teenagers appeared to be at higher risk of injury than adults. Teenagers appeared to be at higher risk of cervical damage than older women (Cates et al., 1983; Cates, 1981).

Although there is little evidence that having had one prior abortion increases a woman's risk of miscarriage, premature birth or bearing a low birth weight baby, there is some evidence that having had multiple abortions may increase this risk, although, again, the results of several different studies do not agree (Levin et al., 1980; Chung et al., 1982).

Is abortion overutilized as a substitute for contraception? The concern that abortion is becoming a substitute for contraception does not seem founded. Although in 1971 the percentage of teen women who had a premarital second pregnancy was higher 2 years after the outcome of the first premarital pregnancy for those who had an abortion than for those who had a birth, by 1979 the figures were reversed. In 1979 teen women who had terminated their premarital first pregnancy by abortion were less likely to have a second pregnancy within two years than those who had carried the first pregnancy to term (Koenig and Zelnik, 1982). Tietze (1978) argued that the increasing number of repeat abortions reflects the increasing number of women who have had a first abortion and are, therefore, at risk of having a second abortion. This appears to be born out by a recent study that shows few differences between women obtaining a first and those obtaining a repeat abortion (Berger et al., 1984). Those obtaining a repeat abortion were older, less likely to be married and more tolerant of legal abortion than were women having a first abortion. They had intercourse more frequently and they were more likely to have been contracepting when they became pregnant. They did not differ on type of method used or on any other demographic, psychological or attitudinal measures. Finally, results from a 1982 national survey show that fewer than one half of 1 percent of women exposed to the risk of unintended pregnancy, who did not use contraception, mentioned the availlability of abortion as a reason for nonuse (Forrest and Henshaw, 1983).

SUMMARY AND CONCLUSIONS

How women choose to resolve their pregnancies has become one of the major factors determining the number and rate of births to teens. Only about half of all pregnancies to teens end in a live birth. Yet only a very small amount of research has been conducted on this important issue. One important issue that researchers have just begun to address is whether miscarriage and abortion have psychological, social, health, familial, educational, economic or other consequences for adolescents and for their families. A few studies have focused on short term psychological effects, but there are no long term studies. The many studies of health effects that have been conducted have found little negative impact on health (Hogue et al., 1982).

One major question that several researchers have addressed is why individual women choose one form of resolution to a pregnancy over another. The major studies in this area use two data sets: the National Surveys of Young Women (1971, 76, 79) and a study of 299 women in Ventura County, California in 1972-74. These are the only studies to provide multivariate evidence on the issue, and they are the only studies to have focused on the resolution of premarital teen pregnancies (as distinguished from postmarital teen pregnancies). It is important to make this distinction. Few people consider maritally conceived pregnancies problematic, although, among young teenagers, they may be. Research suggests that a premaritally pregnant teen is more likely to give birth rather than obtain an abortion if she wanted the pregnancy, is of lower socioeconomic status, is unfavorably dis-

posed to abortion, has lower aspirations and educational expectations, receives parental financial assistance, currently lives in a family that receives public assistance, and lives in a state with higher AFDC benefit levels. These results are based on a very limited set of studies, however, and all these studies suffer from underreporting of abortion.

Among those who give birth, those who are of lower socioeconomic status, who are younger, and who are black are less likely to marry than their peers.

Two types of data are needed: 1) Vital statistics data that can provide national estimates of abortion (and, as a result, pregnancies) by age and, simultaneously, by race/ethnicity, and 2) Survey data that not only provide reasonable estimates of abortion but also contain variables that could be used to test hypotheses about relationships among variables both at one point and over time. At the present time there are no national reporting requirements for abortions. Abortion data are presently estimated from three sources: a national survey of providers by the Alan Guttmacher Institute, counts of characteristics of abortion patients obtained by the Centers for Disease Control and counts of abortions obtained in 12-13 reporting states by the National Center for Health Statistics. National estimates of abortions in survey data can be obtained from the National Survey of Young Women (1971, 1976) and the National Survey of Young Women and Young Men (1979), the National Survey of Family Growth, Cycle III (1982), and the National Longitudinal Survey of Youth, Ohio State University (1979-1985). Unfortunately, all these surveys have documented substantial underreporting of abortions, so they should be used cautiously until we have a better understanding of the bias this introduces into our analyses.

Note

[1] Pregnancies = Births and abortions plus miscarriages. Accurate abortion data are needed to calculate the number of pregnancies. Abortion was legalized in the U.S. in 1973. Prior to this year, the annual number of abortions in the U.S. could only be estimated. Therefore, 1974 was selected as a comparison year since it is probably the first full year with good abortion statistics.

Consequences of Early Sexual and Fertility Behavior

CHAPTER 5

THE HEALTH AND MEDICAL CONSEQUENCES OF ADOLESCENT SEXUALITY AND PREGNANCY: A REVIEW OF THE LITERATURE

Donna M. Strobino

INTRODUCTION

During the early 1970s, much of the concern about adolescent sexual behavior centered on the adverse social, economic and health consequences of early childbearing. As rates of sexual experience rose among adolescents throughout the decade, attention turned to parallel increases in use of induced abortion to terminate pregnancy and in rates of sexually transmitted diseases. This chapter discusses the effects of these increases on the health of the adolescent, her future reproduction and the health of her offspring, as well as the health consequences of adolescent pregnancy.

This review of the literature is limited to those consequences of sexual behavior--sexually transmitted diseases, induced abortion, and birth--that are most likely to affect the physical well-being and future reproductive health of the adolescent population. Even still, it represents a major undertaking involving a vast literature, especially with regard to sexually transmitted diseases. The review of the literature on the health consequences of induced abortion and adolescent birth is a comprehensive compilation of recent studies conducted in the United States. For sexually transmitted diseases, a comprehensive review of the literature is presented only for studies of the prevalence of sexually transmitted diseases (STD) among adolescents and young adults. A complete review of the literature on the sequelae of STDs was beyond the scope of this chapter. In addition, because the focus of the review is reproductive health, the literature on STDs will include primarily studies of women.

Several recommendations for future research are made here based on the review presented below. First, further research is needed to determine whether the elevated risk of STDs among adolescents is due to an increased biological susceptibility to these infections or to a preponderance of other risk factors among young sexually active women. In particular, the role of patterns of sexual behavior among adolescents, such as unplanned sexual encounters, in increasing their risk needs elaboration. Secondly, age differences in the risk of sequelae of STDs, other than pelvic inflammatory disease, need further study as

well as age differences in the risk of some of the more recently publicized STDs, such as genital herpes. Thirdly, the risk of subsequent unfavorable outcomes of pregnancy following more than 2 induced abortions during adolescence remains an area for which few studies have been reported. Fourthly, the factors that place the adolescent at increased risk of unfavorable birth outcomes should be specified in future research. Fifthly, maternal age differences in the rate of fetal growth need further clarification. Finally, the effect of a young age of childbearing on the health of offspring during the early years of life has received little careful scientific scrutiny. In particular, the documented social disadvantages of adolescent childbearing need to be studied in relation to the health of the children of adolescent parents.

SEXUALLY TRANSMITTED DISEASES

Several sexually transmitted diseases (STD) have received considerable attention in recent literature. Their prevalence among teenagers and sequelae will be discussed below. They include genital infections caused by Neisseria gonorrhoeae, Chlamydia trachomatis and herpes simplex virus. Increases in the rate of these STDs have generally paralleled the rise in rates of sexual experience among adolescents. A brief discussion of three other infections will also be included since they may affect the health of the adolescent or her offspring.

Estimates of the prevalence of sexually transmitted diseases among adolescents vary depending on the source of data for the estimates. Sources generally include reported diseases (where the STD is reportable), surveys of visits to office-based practices, data on patients attending sexually transmitted disease clinics, and data on patients attending clinics or other health facilities. The data on reported diseases are limited by differences in the completeness of reporting of diseases for public and private health care sources and, thus, biases in the estimates of rates for individuals who are more or less likely to use public clinics. Survey data are constrained by lack of validation of diagnoses. Data from STD clinics or other health facilities provide information on isolation rates for sexually transmitted microorganisms and permit study of the risk of infection in relation to patient characteristics. Two major disadvantage of these sources of data are patient selection bias and differences between studies in isolation rates depending on the extent of symptoms among the patients studied. The review of the literature on STDs among adolescents is presented with these limitations in mind.

Trends and Risk Factors for Gonorrhea Infections Among Teenage Women

Starting in the mid-1960s, the number of reported cases of gonorrhea rose dramatically among teenagers, particularly among women.

It reached a peak at approximately 276,000 cases in 1979 and has declined since then (Mascola et al., 1983) about 243,000 cases in 1982 (CDC, 1983b). The rate of reported cases of gonorrhea in 1982 was 1425 cases per 100,000 women aged 15-19 years and 71 cases per 100,000 women aged 10-14 years. Among males, the respective rates were 980 and 23 per 100,000 population. Although in 1965 the rate of reported cases of gonorrhea was greater for males than females aged 15-19 years, the female rate surpassed the male rate in 1973 and has remained higher since then.

The rate of reported cases of gonorrhea is especially high for nonwhite women aged 15-19 years, exceeding the white rate by almost tenfold in 1979. Among women under 15 years, the nonwhite rate exceeds the white rate by more than tenfold. Although nonwhites are more likely to utilize public clinics than whites where reporting of gonorrhea cases is more complete (Barnes and Holmes, 1984), the large disparity in the rates between nonwhite and white teenagers is unlikely to be due solely to differences in the reporting of cases.

Between 1967 and 1975, the rise in the rate of reported cases of gonorrhea was greatest among 15-19 year olds of all sex and race groups (Zaidi et al., 1983). Since 1976, the overall rate of reported cases has declined in the United States (Parra and Cates, 1985), while it has remained stable among teenage women. Indeed in 1983, the rate was highest among this age group (CDC, 1984b). Moreover, Bell and Holmes (1984) found that the rates of reported cases of gonorrhea among sexually experienced women declined steadily with age and were especially high for very young teenagers. Their estimates of sexually experienced women were derived from data from the 1971 and 1976 surveys of Zelnik et al. The number of sexually experienced women over age 20 was overestimated by an unknown magnitude, and their rates of gonorrhea were accordingly underestimated by an unknown magnitude. The data on reported cases of gonorrhea may be compromised by age differentials in the reporting of cases, particularly since younger women are more likely to use public clinics where reporting is more complete (Bell and Holmes, 1984). Additional errors in reporting of gonorrhea may result from the lack of uniform criteria to diagnose gonorrhea, and from the difficulty in diagnosing gonococcal infections or invasive gonococcal disease in women (Barnes and Holmes, 1984).

Apart from the limitations of the data, several explanations have been offered for the rise among teenagers in the number and rate of reported cases of gonorrhea between 1965 and 1975. The first is an increase in the numbers of teenagers and young adults in the population (the groups with highest rates of gonorrhea) as a result of the coming of sexual age of the baby boom population (Aral et al., 1983; Cates, 1984; Mascola et al., 1983; Zaidi et al., 1983). This would influence the number of cases. A second explanation is the rise in sexual activity among teenagers, coupled with an earlier initiation of sexual activity and the use of contraceptives that are ineffective in preventing lower genital tract infections (Bell, 1983; Mascola et al.,

1983). Bell (1983) suggests that part of the rise in gonorrhea rates may be artifactual, related to improved diagnosis of Neisseria gonorrhoeae with the introduction of Thayer-Martin culture media in 1964 and to improved screening of cases, especially among women, through the National Gonorrhea Control Program begun in 1973. Cates (1984) notes that in the absence of efforts to control the spread of sexually transmitted disease (STD), the size of the population at risk will determine the magnitude of the problem. Apart from the obvious link with the size of the population at risk, i.e., sexually active, there is no direct scientific evidence to support these explanations.

Whether the higher rates of gonorrhea among teenage women are a result of social and behavioral factors or an increased biological susceptibility remains unclear. There is recent indirect evidence to support the notion of greater biological susceptibility to Neisseria gonorrhoeae among adolescent women (Bell and Holmes, 1984; Washington et al., 1985; McGregor, 1985; Cates and Rauh, 1985; Bell and Hein, 1984). The columnar epithelium is more likely to be located at the porto vaginalis of the cervix among adolescents than among older women (Ostergard, 1977) and thus more exposed to the outside world (McGregor, 1985). Neisseria gonorrhoeae as well as Chlamydia trachomatis appear to have a predilection for this columnar epithelial tissue (Washington et al., 1985; McGregor, 1985). Another biologic factor is more speculative and is related to the unchallenged immune system of the adolescent who has not been previously exposed to sexually transmitted microorganisms (Washington et al., 1985; Bell and Holmes, 1984).

Within the teenage and young adult population, the prevalence of lower genital tract infections with Neisseria gonorrhoeae has been estimated recently in clinical studies of presumably sexually active women (Bowie et al., 1981; Chacko and Lovchik, 1984; Saltz et al., 1983; Anglin et al., 1981; Fraser et al., 1983; Shafer et al., 1984; Wiesmeier et al., 1983). These studies provide estimates of recovery rates of Neisseria gonorrhoeae from 0 to 12 percent among women whose endocervix was cultured during a pelvic examination. The variation in the estimates of the prevalence of gonorrhea may arise from differences in the extent to which the women were currently sexually active and the extent to which the pelvic examination was performed because of symptoms of lower genital tract infection. Moreover, it may also result from differences in the socioeconomic characteristics of the samples studied. For example, in two of the three studies with a rate of recovery of N. gonorrhea exceeding 10 percent (Chacko and Lovchik, 1984; Fraser et al., 1983), the samples included predominantly indigent patients; in the third study, the sample was not described (Anglin et al., 1981). In the four studies with a recovery rate of N. gonorrhoeae of less than 5 percent, part (Saltz et al., 1983; Shafer et al., 1983) or the majority (Bowie et al., 1981; Wiesmeier et al., 1983) of the study patients were from middle income or working class families.

The prevalence of N. gonorrhoeae infections among adolescents and young adults may be influenced by demographic characteristics of the

population as well as by patterns of sexual activity. As noted above, rates of reported cases of gonorrhea are greater among black than white women. Shafer et al. (1983) also reported higher percentages of black women with positive cultures for N. gonorrhoeae than white. Kinghorn and his associates (1982) found a predominance of blacks among young adult British men and women with repeated cases of gonorrhea. Fraser et al. (1983) found no increased risk of gonorrhea among blacks. There is only limited evidence of a relationship between socioeconomic status and gonorrhea rates among adolescents (Ekstrom, 1970) or young adults (Kinghorn et al., 1982).

In a recent review of the epidemiology of gonorrhea, Barnes and Holmes (1984) note possible reasons for the high rates among black women. Persons with ABO blood group B appear to be more susceptible to gonococcal infections; this blood group is more frequently found among blacks than whites. Strains of N. gonorrhoeae that produce asymptomatic infections are found more frequently among whites than blacks.

Sexual behavior, as measured by number of partners and age at first coitus, appears to be associated with gonorrheal infections. In a study of patients attending STD clinics in Sacramento during the summer of 1971, Darrow (1975) found that the rate of gonococcal infections rose with increasing numbers of sexual partners, up to four, and then declined. However, 66 percent of the patients reported only one sexual partner in the past month. Fulford et al. (1983) found a direct relationship between number of lifetime sexual partners and gonorrhea infections among male attenders of an STD clinic in England, while Ekstrom (1970) reported a relationship between a young age at first coitus and gonorrhea for 18-19 year old boys in Copenhagen. A related variable, use of oral contraceptives, does not appear to be associated with gonorrhea (Fraser et al., 1983; Darrow, 1975). Darrow also found no relationship between use of the condom and gonorrhea. But many other studies have found a relationship with the use of contraceptives, especially barriers.

Sequelae of Gonococcal Infections

Pelvic inflammatory disease (PID) is the most severe complication of lower genital tract infections in women (Cates, 1984), resulting from an ascending spread of infection of the lower genital tract (Westrom, 1980). Although it has been held for a number of years that Neisseria gonorrhoeae is a common cause of PID, recent evidence suggests that it has a multifactorial microbial etiology (Thompson and Washington, 1983; Westrom, 1980). Since PID can be caused by a number of microbial agents, but these agents have seldom been specifically detected in studies, it is difficult to determine the incidence of gonococcal PID or the factors exclusively associated with gonococcal PID. Barnes and Holmes (1984) indicate that PID may occur in 10 to 20 percent of women with gonorrhea.

PID is a vague term, frequently used to refer to salpingitis, inflammation of the uterine tubes. Accurate diagnosis is problematic based on clinical criteria since they are not always confirmed by laproscopy (Westrom, 1980). Many salpingitis patients have atypical signs and symptoms and some have none, especially those with infections caused by Chlamydia trachomatis (Westrom, 1980). Moreover, while signs and symptoms are generally used to define PID in clinical studies, it is commonly defined in survey data by one or more International Classification of Disease (ICDA) codes, some of which are noninfectious disorders (Westrom, 1980).

An analysis of data from the Hospital Discharge Survey (HDS) indicates that rates of hospitalization for PID rose between 1975 and 1981 among white women aged 15-24. In 1979-81, women aged 15-24 years had the highest rate, i.e., 100,000 women, of hospitalization for PID, surpassing women aged 25-34 years for whom the rate was highest in 1975-78. Among nonwhite women aged 15-24 years, rates of hospitalization remained stable between 1975 and 1981. Nonwhite women had higher rates of hospitalization during the entire period, but because of the rise in rates for young white women, the ratio of nonwhite to white rates declined from 1975 to 1981 (Washington et al., 1984). The higher rates of PID among black women with gonorrhea may be explained by a high proportion of gonococcal infections caused by strains more likely to produce PID (Holmes et al., 1980).

While rates of hospitalization increased for young white women in the mid-1970s, the rate of visits for PID to office-based physicians declined, as reported from the National Disease Therapeutic Index (NDTI) and the National Ambulatory Medical Care (NAMC) Survey (CDC, 1980). Most of the decline occurred among nonwhite women (Cates, 1984), but age-specific visit rates have not been reported. Washington et al. (1984) suggest that the rise in hospitalizations and the concomitant decline in office visits for PID may be due to a greater concern for its consequences and, thus, a lower threshold of physicians for hospitalizing women with PID.

When rates of hospitalization for PID are estimated for sexually experienced women, the rates decline exponcntially with age (Bell and Holmes, 1984). Similarly, Westrom (1980) estimated that the risk of acquiring salpingitis in a sexually active girl was 1 in 8 for 15 year olds, 1 in 10 for 16 year olds but 1 in 80 for women aged 24. In contrast, Chacko and Lovchik (1984) found the risk of PID, as measured by clinical signs, rose from 3 percent among 13-14 year olds to 13 percent for 17-18 year old sexually active women in a predominantly black, urban sample.

Westrom (1980) argues that promiscuity may be the reason for the high risk of salpingitis among 15-16 year olds; among 15 year olds with coital experience, 50 percent reported four or more sexual partners in the past year compared with 20 percent among 18 year olds. A possible biological reason for the higher risk among young women is related to

the age differences in location of cervical columnar epithelium discussed above. The Light transparent phenotype of N. gonorrhoeae is associated with infection of the fallopian tubes. It has been found to be more copious in the cervix of young women than older women, attaching itself to the columnar epithelium better than the less virulent opaque phenotype (Bell and Holmes, 1984; Bell and Hein, 1984).

The IUD has been implicated as a possible causative agent in PID. The risk of PID is about 2 to 4 times greater for IUD users than non-users, regardless of the study design or the study site (Senanayake and Kramer, 1980; Lee et al., 1983). This risk is especially high for the Dalkon Shield (no longer available and recalled by FDA order) (Lee et al., 1983). Few U.S. teenagers use IUDs and it is generally not recommended for women in this age group, especially if they have not had children. The risk of PID, on the other hand, is reduced with use of oral contraceptives (Senanayke and Kramer, 1980) and with use of barrier methods (Kelaghan et al., 1982). Sterile inflammation in the endometrium and uterine tubes following IUD insertion and possible mechanical damage to the endometrial epithelium are two mechanisms hypothesized by which the IUD facilitates the ascent of microbes through the uterus to the fallopian tubes. Explanation for the protective effect of oral contraceptives on PID are related to the possible effect of steriods on the density of cervical mucus or uterine muscular activity (Senanayake and Kramer, 1980).

The rising rates of hospitalization for PID among young U.S. women are important because of their possible association with rising infertility and ectopic pregnancy rates. Between 1965 and 1976, the percentage of infertile couples with the wife aged 25-29 rose in the United States. Among blacks, the increase was especially pronounced among couples with wives aged 20-24 for whom the percentage infertile rose from 3.3 percent in 1965 to 15 percent in 1976 (Aral and Holmes, 1984). Between 1970 and 1978, the ectopic pregnancy rate rose by more than twofold. Again, the rise was greatest among black women. Maternal death-to-case rates from ectopic pregnancy are more than 3 times greater for black women than for white women (Rubin et al. 1983).

Tubal damage following PID is estimated to be associated with 30 to 40 percent of cases of female infertility and in 40 to 50 percent of ectopic pregnancies (Westrom, 1980). However, determining a direct causal link between PID and its possible sequelae is difficult. Westrom (1980) found that infertility because of tubal occlusion occurred in 15.2 percent of women treated earlier for laproscopically verified salpingitis who later exposed themselves to the risk of pregnancy. The percentage with tubal occlusion infertility was twice as great for women aged 25-34 as for women aged 15-24, but age differences were found only for women with one infection. Infertility varied directly with the number of infections, reaching a peak of 54 percent among women with three or more infections. It also was directly associated with severity of infection among those with only one infection. The

fertility prognosis for women under 25 was better with gonococcal-associated salpingitis than with nongonococcal salpingitis.

Using the same data, Westrom (1980) studied the relationship of acute salpingitis with ectopic pregnancy. The ratio of ectopic to intrauterine pregnancy was 1:16 in the first pregnancy after salpingitis in 1968-74 and 1:24 in 1960-67. Among healthy control women (not described), the ratio was 1:147. Westrom estimated that women in the post-PID state accounted for about one-quarter of the rise in ectopic pregnancies in Lund, Sweden between 1960 and 1979 in women aged 20-29 years.

Prevalence and Trends in Chlamydial Infections

Chlamydial infections of the lower genital tract have surpassed gonococcal infections as the most prevalent STD among U.S. women and are a common STD among adolescents (Anglin et al., 1981; Cates, 1984; Fraser et al., 1983; Hare and Thin, 1983; Saltz et al., 1983; Schachter et al., 1975; Shafer et al., 1984; Thompson and Washington, 1983). Unlike gonorrhea, however, infections caused by Chlamydia trachomatis are not reportable conditions. Thus, most estimates of the prevalence of chlamydial infections are derived from clinical studies or reports of nonspecific lower genital tract infections in women (Hare and Thin, 1983) or of nongonococcal urethritis (NGU) in men (Cates, 1984); both have been linked with C. trachomatis (Hare and Thin, 1983).

The prevalence of chlamydial infections of the lower genital tract has been estimated to be between 7 and 23 percent among young women cultured during a pelvic examination. In all but one study the prevalence of chlamydial infections was greater than the prevalence of gonococcal infections. Like gonorrhea, differences in recovery rates of C. trachomatis are likely due to variations in patient characteristics. For example, Shafer et al. (1984) noted that in adults the rate of chlamydial infection varies in adults from 4 to 8 percent among asymptomatic women to over 20 percent in women with symptoms of lower genital tract infection.

There appears to be an increased risk of chlamydial infections among teenage women. Hobson et al. (1980) found that the degree of infection with C. trachomatis, as measured by the number of inclusions per coverslip of McCoy culture, was greater among women under 20 than older women. However, their findings did not suggest that this age effect was due to greater exposure of cervical columnar epithelial tissue (cervical ectopy) among the young women. They speculated that it may have an immunological basis. Harrison et al. (1983) reported a significant correlation between a positive culture for C. trachomatis and an age less than 24 years among pregnant low and middle income, white and Hispanic women. Within the teenage group, there does not appear to be an association of chlamydial infection with age (Anglin et al., 1981; Fraser et al., 1983; Wiesmeier et al., 1984) or gynecologic age (Shafer et al.).

The evidence regarding an association between a positive culture for C. trachomatis and the demographic characteristics of the adolescent is conflicting. While Fraser et al. (1983) found no association with race, Shafer et al. (1984) reported a higher percentage of black females with a positive culture for C. trachomatis than whites or Hispanics. Shafer et al. found no relationship of socioeconomic status with a positive culture. On the other hand, Harrison et al. (1984) reported a significant correlation between a positive culture for C. trachomatis and maternal occupation and maternal education among pregnant women; their sample included older women as well as adolescents, although the reported relationship remained significant when adjustments were made for age differences in education and occupation.

Sexual behavior, as measured by a young age at first intercourse (Shafer et al., 1984) and multiple recent sexual partners (Chacko and Lovchik, 1984; Wiesmeier et al., 1984), has been associated with increased rates of recovery of C. trachomatis, although Fraser et al. (1984) found no association between recovery of C. trachomatis and number of lifetime or recent sexual partners. There appears to be an increased risk of chlamydial infections among adolescents using oral contraceptives (Shafer et al., 1984; Fraser et al., 1983). Moreover, Hobson et al. (1980) found an increased degree of infection with C. trachomatis among women using oral contraceptives, regardless of whether they had cervical ectopy; cervical ectopy was positively related to the degree of infection. Shafer et al. (1984) and Fraser et al. (1983) have suggested that hormone-induced increases in cervical columnar epithelial tissue among oral contraceptive users may be the reason for their increased risk, but the work of Hobson et al. (1980) only partially supports their speculation. Fraser et al. (1983) also suggested that it may be due to more promiscuity among oral contraceptive users but gave no data to support this speculation. Chacko and Lovchik (1984) did not find an association between oral contraceptive use and the prevalence of Chlamydial genital infections.

Sequelae of Chlamydial Infections

There is considerable evidence to suggest that infections with C. trachomatis are frequently asymptomatic in females (Fraser et al., 1983; Wiesmeier et al., 1984) or have nonspecific symptoms (Shafer et al., 1983). Because of the asymptomatic nature of these infections, their sequalae become increasingly important in evaluating the extent to which they impact on the future reproductive health of the adolescent. In a review of studies of chlamydial infections of the pelvic region, Thompson and Washington (1983) reported that during the 1970s C. trachomatis was isolated from between 15 and 70 percent of cases of acute salpingitis in Scandinavian countries, but in only 0 to 10 percent of cases in the United States. The lower recovery rates in the U.S. may be due to an inability to utilize minute biopsies of tubal epithelium (Thompson and Washington, 1983). Among women under 25 years in Lund, Sweden, Westrom (1980) found that over one-half of PID cases were caused by C. trachomatis.

The magnitude of infertility that can be directly attributed to C. trachomatis is unknown (Thompson and Washington, 1983). Although results of studies in which cultures were taken from the fallopian tubes during laproscopy are inconsistent, recent reports have shown a relationship between elevated levels of antichlamydial antibodies and tubal factor infertility (Gibson et al., 1984; Thompson and Washington, 1983). However, many of the infertile patients with elevated antichlamydial antibodies have reported no history of PID (Gibson et al., 1984; Thompson and Washington, 1983), suggesting undetected infections in these women.

The evidence of a link between chlamydial salpingitis or PID and ectopic pregnancy is indirect. For example, Thompson and Washington (1983) show a parallel rise in cases of PID and ectopic pregnancy rates between 1966 and 1973 as indirect evidence of the link between the two. Although Westrom (1980) shows more direct evidence of the association between salpingitis and ectopic pregnancy, the percentage of tubal pregnancies resulting from chlamydial induced tubal damage is unknown.

C. trachomatis has also been implicated in conjunctivitis and an afebrile pneumonia syndrome in the newborn (Fraser et al., 1983; Schachter et al., 1979). Estimates of the prevalence of C. trachomatis infections in pregnant women range from 7 to 27 percent in the U.S. (Thompson and Washington, 1983; Chacko and Lovchik, 1984). The highest rates have been reported among young urban women (Cates, 1984; Harrison et al., 1983; Thompson and Washington, 1983). Chacko and Lovchik (1984) reported a prevalence of 27 percent among pregnant teenagers aged 13-18. Schachter et al. (1979) estimated that given a cervical infection rate of 4 percent, there will be 14 cases of chlamydial conjunctivitis and 8 cases of chlamydial pneumonia per 1,000 live births. These estimates may be low for pregnant adolescents, given their high rates of chlamydial infections.

There is considerable epidemiological evidence linking the number of sexual partners and a young age at first intercourse to an increased risk of cervical cancer (Hare and Thin, 1983; Rotkin, 1967; Schachter et al., 1982). This evidence has led recent investigators to study the role of C. trachomatis in the development of cervical cancer (Hare and Thin, 1983; Schachter et al., 1982). While it may play a role in a small proportion of cases of cervical cancer (Hare and Thin, 1983), Schachter et al. (1982) could not offer an explanation for its association with cervical cancer, particularly since the cell nucleus does not appear to be affected in chlamydial infections.

Prevalence and Trends in Herpes Simplex Virus Infections of the Lower Genital Tract

The widely held contention that herpes simplex virus (HSV) infections of the lower genital tract increased during the 1970s is supported by an analysis of data from the NDTI (Becker et al., 1985).

The proportion of consultations for genital HSV infections in office-based fee-for-service practices rose from 30 per 100,000 consultations in 1966 to 336 in 1981 (Becker et al., 1985). In contrast, the rate of consultations for oral herpes and ocular herpes infections rose by less than twofold between 1966 and 1979 (CDC, 1982). In 1966, the number of visits to office-based practices for men outnumbered visits for women, but by 1980, visits by women for genital herpes surpassed those for men. The rise in the number of visits for genital herpes was very large for women aged 15-19, increasing from about 15,000 yearly visits in the beginning of the period to over 110,000 at the end (Becker et al., 1985).

The NDTI data do not give estimates of the total occurrence of HSV infections in the United State since sources of health care such as HMOs, public clinics and hospital outpatient clinics are not included. Nevertheless, Sullivan-Bolyai et al. (1983) also reported a rise in the percentage of visits for genital herpes infections between 1976 and 1981 among patients attending STD clinics in King County, Washington. An increased awareness and better diagnosis of HSV infections may explain some of the rise in genital HSV infections, but part of the rise occurred before intensive media campaigns about genital herpes (Becker et al., 1985).

Estimates of the prevalence of HSV genital infections are far more difficult to obtain. Depending on the sample population, they range from 0 to 6 (CDC, 1979; Josey et al., 1972; Schachter et al., 1975). Two studies have estimated the prevalence of genital HSV infections in a University sample. About 1 percent of the students who attended the Student Health Services (SHS) at UCLA in 1975 and 1976 had genital herpes infections, as defined by clinical criteria (Sumaya et al., 1980). The mean age of the patients with a single first infection was similar to that for the general student population. The percentage with clinically diagnosed genital HSV infections was lower (0.6) among women who were treated for gynecological problems at the SHS at Penn State University in 1974 and 1975 (Kalinyak et al., 1977). The percentage of women with virologically confirmed infection was 0.3.

There is little known about the risk factors associated with HSV genital infections, largely because descriptive studies of convenience samples of virologically confirmed cases of HSV infections are the primary source of this information (Nahmias et al., 1973). Both cytological and virological evidence suggests that HSV genital infections occur more frequently among lower socioeconomic groups (Josey, 1972; Baker and Amstey, 1983; Lancet, 1981; Rawls, 1971), although there is recent evidence that they also are common among higher socioeconomic groups (Bierman, 1983; Knox, 1982). The risk of experiencing recurrences has been reported to be greatest among higher socioeconomic groups (Lancet, 1981). Rawls et al. also found a younger mean age and a greater percentage of unmarried persons among patients with genital herpes infections than controls, but their control population was not well defined. Adler-Storthz et al. (1985) found that the frequency of

antibodies to HSV-2 rose with the number of sexual partners. HSV infections have also been associated with other sexually transmitted infections (Josey, 1972; Rawls, 1971; Sumaya, 1980).

The two strains of HSV, HSV-1 and HSV-2, have been commonly thought to infect different sites in the body, HSV-1 with a predilection for sites above the waist and HSV-2 for the genital tract (Baker and Amstey, 1983; Josey et al., 1972; Lancet, 1981). Recent studies have questioned this distinction; suggesting that about one-third of genital herpes infections are HSV-1 infections (Kalinyak et al., 1977; Lancet, 1981). Changing sexual patterns are generally given as the reason for the increasing percentage of HSV-1 genital infections (Amstey and Baker, 1983; Lancet, 1981).

Sequelae of Genital Herpes Infections

The importance of recent trends in genital herpes infections lies in two features of these infections. First, the clinic manifestations of genital herpes infection tend to recur (Baker and Amstey, 1983; Cates, 1984; CDC, 1982; Knox, 1982). Secondly, genital herpes infections have been associated with cervical cancer in the woman and with life-threatening infections in the neonate (Cates, 1984; CDC, 1982).

Smith (1983) has recently reviewed the evidence regarding a relationship between HSV-2 genital infection and cervical cancer. The literature is vast and has taken multiple approaches. Smith (1983) concluded that the greatest support for an association between the two is that, given the multiple study approaches, HSV-2 has yet to be scientifically discredited.

Genital HSV infection, both asymptomatic and symptomatic, have been associated with HSV infection in the newborn (Sullivan-Bolyai et al., 1983; Whitley et al. 1980a; Whitley et al., 1980b). Infection in the newborn may be disseminated or localized. Disseminated and localized central nervous system (CNS) disease accounts for about 75 percent of the cases of neonatal herpetic infections; their respective mortality rates are about 80 and 30 percent (Whitley et al., 1980a). Severe CNS damage is common among survivors (Whitley et al., 1980a). Sullivan-Bolyai et al. (1983) reported a rise in the rate of neonatal herpes infections in Kings County, Washington between 1965 and 1982, mirroring the rise in consultations for genital herpes.

Whitley et al. (1980b) reported mothers delivering infants with herpetic infections to be young and nulliparous. Sullivan-Bolyai et al. (1983) also found them to be young, with a mean age of 23 years and a range of 17 to 34 years. However, whether these results imply an increased risk of neonatal herpes infections among the newborn of teenager mothers is unclear.

Other Sexually Transmitted Infections Among Teenage Women

Three STDs, syphilis, human papillomavirus, and group B streptococcal infections, warrant brief description here. Although rates of syphilis had been declining for several decades through the mid-1970s, there was a rise in the number of cases reported to CDC in 1982 (CDC, 1983). Rates of syphilis are much lower than rates of gonorrhea, and they do not show the preponderance of females in cases among teenagers (Fichtner et al., 1983). Nevertheless, estimated syphilis rates vary inversely with age among sexually experienced women (Bell and Holmes, 1984). Moreover, the number of reported cases of congenital syphilis has risen in the United States in recent years (Mascola et al., 1984). While most of these cases can be prevented by adequate prenatal care and appropriate diagnosis, some cases result from incubating infections at the time of delivery. They are more frequent among young mothers than older mothers and among minority women (Mascola et al., 1984).

The prevalence of genital warts among teenagers has not been reported, although they are generally at least three times more frequent than HSV infections (Parra and Cates, 1985). Of major concern with human papillomavirus (HPV) is the association of subtypes 16 and 18 with cervical cancer (Bernstein et al., 1985; Crum et al., 1983; Crum et al., 1984). Indeed, Crum et al. (1984) contend that HPV 16 is virtually specific for squamous-cell neoplasms. Aral and Holmes (1984) reported data indicating a rise in the rate of genital warts among men and women in England and Wales between 1970 and 1980.

Sexual transmission of group B streptococcal infections remains unclear. (Aral and Holmes, 1984). Yet, they have been recently implicated as the major cause of neonatal sepsis in a number of institutions (Aral and Holmes, 1984). Because of the emergence of group B strep as a cause of early sepsis, their occurrence among teenage mothers is a concern.

THE EFFECT OF INDUCED ABORTION ON THE HEALTH OF THE ADOLESCENT AND HER FUTURE OFFSPRING

In 1981, the number of induced abortions occurring to teenagers was close to 450,000. They represented 28 percent of all induced abortions in the United States in that year (Henshaw et al., 1985). In sheer numbers alone, complications associated with induced abortion could have a major impact on the health of the adolescent and her subsequent offspring. This review will first discuss the literature comparing complications following induced abortion between adolescent and older women. It will be followed by a review of the literature on the impact of induced abortion on subsequent fertility and pregnancy outcomes. Only recent U.S. studies or studies in other countries with induced abortion laws and practices similar to the U.S. will be included. Since very few studies compare outcomes by maternal age, the review must focus on studies of women of all ages.

Variations in abortion practices by age warrant comment here as they may influence complications following induced abortion and subsequent pregnancy outcomes. Teenagers are twice as likely as older women to obtain an abortion after 12 weeks gestation and the youngest teenagers are most likely to delay seeking an abortion (Cates, 1980; Lang et al., 1983). Length of gestation is the most important determinant of abortion complications (Cates, 1980). It largely determines the abortion method, and methods used later in pregnancy have elevated risks of complications (Cates et al., 1977). Moreover within methods, complication rates vary directly with gestation (Cates et al., 1977). In 1981, suction curettage was virtually the only method used in the United States for pregnancies under 13 weeks gestation. At 13-15 weeks and 16 weeks, dilatation and evacuation was the most common method used (Henshaw et al., 1985). In 1980, it replaced saline infusion as the most frequently used method at 16-20 weeks (Lang et al., 1983).

Teenagers are less likely to be represented among women with repeat abortions, the most probable reason because of less time exposed to the risk of pregnancy and, thus, abortion (Burnham, 1983). Nevertheless, because they experience an induced abortion at a young age, they are at greater risk of a repeated abortion than older women by virtue of their greater length of time remaining for exposure to an unwanted pregnancy. Number of previous abortions has been associated with subsequent pregnancy outcomes (Maine, 1979), although the evidence regarding increased risk of subsequent pregnancy problems is not confirmatory (Hogue et al., 1982).

Complications Following Induced Abortions Among Teenagers

The most comprehensive analysis of complications of abortions among teenagers has been reported by Cates and his colleagues (1983) using data from the Joint Program for the Study of Abortion (JPSA) and the CDC's surveillance of abortion-related mortality. The JPSA included data on morbidity for over 80,000 legal abortions in 32 institutions in 1971-1975, and for over 84,000 legal abortions in 13 institutions in 1975-1978. Over 50,000 abortions to teenagers were included. The data for the two periods were analyzed separately because of slightly different terms used in the studies. An overall complication rate, including fifteen major complications, as well rates for fever (temperature of 38 degrees C or above for 3 or more days), hemorrhage requiring transfusion, and unintended abdominal surgery were studied by abortion method. These latter complications accounted for 80 percent of the major complications between 1971 and 1975.

The overall risk of major complications following abortions by suction curettage at 12 weeks of gestation or earlier was similar for teenage and older women, 3 per 1000 procedures in 1971-75 and between 1 and 2 per 1000 in 1975-78. Complication rates for fever and for uterine hemorrhage did not vary with age, but rates of transfusion for hemorrhage were lower among teenagers. Teenagers also had lower rates

of uterine perforation, particularly if they had no previous term pregnancy. On the other hand, teenagers aged 17 or less had higher rates of cervical injury, even when adjustment was made for other factors related to cervical trauma such as method of dilatation, gravidity, level of medical training, use of general anesthesia, and gestation.

Complication rates associated with abortions by dilatation and evacuation or saline administration were lower for teenagers than any other age group; rates generally varied directly with age and were greater following saline administration than following dilatation and evacuation. The rate of febrile morbidity was lower among teenagers than older women in 1971-75. Transfusion rates were lower among teenagers for all years. Following abortions from saline administration, teenagers had lower rates of hemorrhage requiring transfusion, unintended major surgery and retained products of conception. They had lower failure rates and shorter administration to abortion times as well (Cates et al., 1983).

The risk of dying from legally induced abortion was also lower among teenagers than older women between 1972 and 1978; death rates varied directly with age. Within gestation, teenagers had the lowest death rates. They had slightly higher death rates from infectious complications than older women but slightly lower death rates from embolic events or from reactions to anesthesia (Cates et al., 1983). Grimes et al. (1981), however, reported that the death-to-case rate from sepsis after legal abortion was almost six times greater among teenagers than among women over 20 years. In contrast, death rates from hemorrhage were considerably higher among women over 20 than among teenagers (Cates et al., 1983; Grimes et al., 1983).

Two potential sources of bias in the analysis of JPSA data were possible selection of more skilled physicians by teenagers and less frequent reporting of complications by teenagers (Cates et al., 1983). Cates and his associates concluded that like any surgical procedure, induced abortion was not without risks, but these risks were not greater for the teenager than for the older women and in some circumstances, they were less. The one exception, also noted by Tyler (1983), was the greater risk of cervical trauma among teenagers. Cervical trauma following induced abortion may increase the risk of unfavorable outcomes in subsequent pregnancies because of the presumed association between cervical trauma and the occurrence of incompetent cervix (Tyler, 1983; Hogue et al., 1982).

Despite their thorough analysis of the risk of induced abortion Cates et al. (1983) did not report the overall morbidity rate following abortion for teenagers. The extent to which the greater delay in obtaining abortion among teenagers increases their overall risk of morbidity, regardless of their lower rates of morbidity following second trimester induced abortions, cannot be evaluated from their analysis. Harman (1981), using data on abortions performed at a large

university hospital in Winnipeg, Manitoba between 1974 and 1979, reported that teenagers had a 35 percent greater chance of experiencing at least one complication than older women. This higher risk was due to the predominance of teenagers among women obtaining second trimester abortions. Similarly, Wadhera (1982) reported almost a twofold greater complication rate following induced abortion during 1975-1980 for Canadian teenage women than older women. Again, one important reason for their high complication rate was the later gestations at which teenagers obtained abortions. While the analysis of Canadian data suggests a higher complication rate among teenagers because of delay in seeking abortion, the Canadian experience with abortion is not directly comparable with that in the U.S. The Canadian policies with regard to access to abortion are far more restrictive than those in the United States, and the complication rates reported by Wadhera (1982) are considerably higher than those reported by Cates et al. (1983).

The Effect of Induced Abortion on Outcomes of Subsequent Pregnancies

The method of pregnancy termination (WHO, 1979) and whether or not abortion is legal are two important factors that may influence the impact of induced abortion on subsequent pregnancies (Hogue et al., 1982). Moreover, differences between women who seek induced abortion and those with no abortion experience may also influence the risk of unfavorable pregnancy outcomes. In this review, only studies that included women who obtained an induced abortion after 1970 will be discussed; the degree and extent of cervical dilation during evacuation procedures has been reduced since 1970 (Hogue et al., 1982). In addition, the vast majority of studies reported here were conducted in the United States. Two studies from other countries (Meirik and Bergstrom, 1983; Van Der Slikke and Treffers, 1978) will also be discussed since they include women whose abortions were known to have been performed by vacuum aspiration with minimal dilatation. Several studies from other countries have been excluded because induced abortion was illegal in the study country (Daling and Emanuel, 1975; Papevangelou et al., 1973; Pantelakis et al., 1973); the method of abortion was not reported (Ratten and Beischer, 1979; Richardson and Dixon, 1976); or data on subsequent pregnancy outcomes were obtained from respondent reports to a mailed questionnaire and no subsequent follow-up or validation was performed (Dalaker et al., 1979).

One additional methodological issue is important in evaluating the studies reported here. There is considerable debate regarding what constitutes an appropriate comparison group for women with a prior induced abortion, particularly with regard to gravidity and parity. Both cannot be controlled in a comparison group unless the group experienced a prior spontaneous abortion (Hogue et al., 1982); the risk of subsequent unfavorable pregnancy outcomes is increased for women experiencing a prior spontaneous abortion. On the other hand, unfavorable pregnancy outcomes, such as preterm or low birth weight infants, occur

more frequently among primiparous women than among multiparas. The conclusions derived from a given study depend on whether the comparison group was experiencing a first or second pregnancy and whether, if a second pregnancy, the first resulted in a spontaneous abortion or live birth (Hogue et al., 1982).

There appears to be no association between a history of one (Daling and Emanuel, 1977; Madore et al., 1981; Schoenbaum et al., 1980) or more (Daling and Emanuel, 1977) induced abortion and the birth weight of infants born in subsequent pregnancies. Linn et al. (1983) initially found a direct relationship between LBW rates and number of prior induced abortions, but it was not signifioant when adjustment was made for differences by abortion status in age, race, welfare status, parity and cigarette smoking. Daling and Emanuel (1977) found no differences in birth weights of infants of primiparous women under age 20 with and without a prior induced abortion, but their numbers were quite small (65 women with a prior induced abortion and 65 controls similar on religion, marital status and payment for medical expenses).

There also appears to be no association between a history of induced abortion (Daling and Emanuel, 1977; Madore et al., 1983) or number of induced abortions (Daling and Emanuel, 1977; Meirik and Bergstrom, 1983) and preterm deliveries, before 37 weeks of gestation. Linn et al. (1983) found similar results for preterm births similar to those for LBW infants. Daling and Emanuel (1977) reported no association between a history of induced abortion and subsequent preterm deliveries in women under 20 years. Van Der Slikke and Treffers (1978) found an increased percentage of deliveries between 17 and 31 weeks among primiparous women with at least one induced abortion. However, they argued that their findings were applicable only to the Netherlands.

If there is an effect of induced abortion on subsequent pregnancy outcomes, the evidence appears to be most convincing regarding second trimester spontaneous abortions among nulliparous women. Harlap et al. (1979) found a twofold increased risk of second trimester spontaneous abortions among nulliparous women with a prior induced abortion compared with nulliparous women with no prior induced abortion. Among women with two or more prior induced abortions the risk was increased by threefold. There was no increased risk of second trimester spontaneous abortions among multiparous women with a history of induced abortion. Madore et al. (1981) also reported more second trimester losses among women in their induced abortion group (nulliparous and Primiparous). On the other hand, Chung et al. (1982b) found no association between history or number of induced abortions and subsequent second or third trimester spontaneous abortions. A major limitation of their study is the use of fetal death records to measure outcomes of subsequent pregnancies; these records are notoriously underreported, underreporting varying inversely with length of gestation. Underreporting is a greater problem in studying first trimester spontaneous abortions, and because of it, they are not discussed here.

Two case-control studies show conflicting results regarding the risk of spontaneous abortions for women with a history of induced abortions. Kline et al. (1978) found no association between second trimester spontaneous abortions and an induced abortion for any prior pregnancy or for the pregnancy immediately preceding the study pregnancy. Levin et. al. (1980) also reported no significant association between second trimester abortions and one prior induced abortion. However, the odds of a second trimester abortion increased with increasing number of prior induced abortions. Selection bias in the choice of controls cannot be ruled out as an explanation for the findings in either of these studies.

There is mixed evidence regarding whether the number of induced abortions is related to subsequent ectopic pregnancies. Madore et al. (1981) and Chung et al. (1982a) found no association between history or number of induced abortions and subsequent ectopic pregnancy. Chung et al. reported higher ectopic pregnancy rates for women with infection complications and retained products of conception following induced abortion, but their numbers were too small to make valid inferences. A more efficient design for studying this rare event is the case-control study of Levin et al. (1982). They found no significant association between a subsequent ectopic pregnancy and one induced abortion, but the odds of an ectopic pregnancy was 2.6 for women with two or more prior induced abortions. Even in this study, the number of women with ectopic pregnancies was small (85). In a review of the literature on abortions (Hogue et al. (1982) concluded that even if there is an elevated risk of ectopic pregnancy following an induced abortion, it is not large enough to yield consistent results in relatively large case-control studies.

There is no evidence in prospective studies of a relationship between a history of induced abortion and subsequent offspring with congenital anomalies (Linn et al., 1983; Madore et al., 1983). In a case-control study, Bracken and Holford (1979) reported an increased risk of congenital malformations following induced abortion, but only among infants born to black women under 30 years of age. Congenital malformations were not adequately defined in any of these studies, particularly with regard to the ages at which the diagnoses were made.

Linn et al. (1983) also studied a variety of complications of pregnancy in relation to a history of induced abortion. First trimester bleeding was the only complication of pregnancy significantly associated with only one prior induced abortion. Abnormal presentations and premature rupture of the membrane in addition to first trimester bleeding were significantly associated with two or more prior induced abortions.

Finally, induced abortion does not appear to affect subsequent fertility. In a prospective study with repeated follow-up for 30 months, Stubblefield et al. (1984) found no significant difference in pregnancy rates for women with a prior induced abortion and control women with a

previous pregnancy. The one exception was at 9 months postabortion, when the abortion group reported greater use of contraceptives. At the time of enrollment, sample women were aged 18-20 years. In two case control studies, Daling and Emanuel (1981) and Daling et al. (1985) found no significant association between secondary infertility and a history of one or more induced abortions. In both studies, the cases of secondary infertility were limited to women who sought medical care for their problem.

The major limitation of the studies reported here are that with the exception of the work of Daling and Emanuel (1977), where the numbers are small, and the research of Bracken and Holford (1979) and Stubblefield et al. (1984), the effect of a prior induced abortion on subsequent pregnancy outcomes has not been evaluated for young age groups. Given the increased risk of cervical injury as a complication of abortion for teenagers and its possible association with subsequent unfavorable pregnancy outcomes, more research on the delayed effects of induced abortion among teenagers is needed. The sheer numbers of abortions performed on teenagers annually in the U.S. also justify continued research on the subject.

THE MEDICAL AND HEALTH CONSEQUENCES OF ADOLESCENT BIRTH

The literature concerned with the medical and health consequences of adolescent childbearing presents mixed conclusions ranging from statements of the biological advantages of youthful birth to conclusions of an increased incidence of a variety of complications of childbearing and unfavorable birth outcomes (Morris, 1981). Most recently, there is increasing evidence to support the conclusion that adolescence, per se, may not be a risk factor for poor health outcomes of the mother or her offspring, but rather, that the preponderance of other risk factors such as low socioeconomic status, poor prenatal care and primiparity is the reason for their poor outcomes. This review will compile the evidence published since 1960 to evaluate this general conclusion.

The literature abounds with descriptive studies of a series of adolescent patients, but few of these studies will be reviewed here. Rather, this review focuses on studies that included an adolescent sample and a comparison sample of older pregnant women. There are a few investigations reported here that explored explanations for the increased incidence of complications and unfavorable outcomes among adolescent mothers only. The following complications of pregnancy: pregnancy induced hypertension; anemia; cesarean deliveries; and contracted pelvis, and unfavorable pregnancy outcomes: low birth weight; prematurity; perinatal mortality; neonatal mortality; infant mortality; neonatal morbidity; and morbidity during the first year of life, are compared for adolescents and older mothers. Maternal mortality was not evaluated in the vast majority of the studies because it occurred very infrequently among the women studied.

Pregnancy Induced Hypertension

Pregnancy induced hypertension (PIH) is one of the most frequently and consistently reported complication of adolescent childbearing. An increased incidence of PIH among adolescents appears, in part, to be explained by a preponderance of women who are black, experiencing their first pregnancy and who receive inadequate prenatal care among adolescents, when compared with older women. Yet, understanding of the etiology of PIH among adolescents as well as older women remains limited.

There is no uniform definition of PIH or preeclampsia used in studies of adolescent pregnancy and frequently no definitions are given. Terminology varies, including pregnancy induced hypertension and preeclampsia in more recent studies, and toxemia in older studies. When a definition of preeclampsia is not given in a study, it is assumed that it refers to a clinical diagnosis noted in the medical record with the inherent problems of differences in the degree to which providers diagnose or record the condition. The number of cases of eclampsia were too few to evaluate in the adolescent studies.

In those studies where PIH was investigated as a complication of pregnancy, the percentage of adolescents with PIH ranged from a low of 2.5 percent among whites studied by Israel and Woutersz (1963) to a high of 34.0 percent among the predominantly black adolescents studied by Duenholter et al. (1975). In the majority of the studies, the percentage of adolescents with PIH ranged from 7 to 17 percent. Moreover, the percentage of women with PIH was generally higher among adolescent women than the older control group.

Differences in the definition of PIH may influence the magnitude of the differences in the percentage of women with PIH between adolescent and control women, especially if underlying hypertension is included. Yet, it is more likely that they are influenced by differences in confounding variables between the adolescent and older control group, particularly race and parity. Among the studies where there was no attempt to adjust for differences between adolescent and older women on race or parity, the adolescents had higher percentages of PIH (Claman and Bell, 1964; Semmens, 1965; Utian, 1967; Jovanovic, 1972). The one exception was Briggs et al. (1962), a study including a very unusual comparison sample. When rates of PIH were compared in studies by race, differences by age were markedly reduced (Battaglia et al., 1963; Haskin, 1963; Israel and Woutersz, 1963; Spellacy et al., 1978). Indeed, Haskin (1963) showed greater between race differences within age than between age differences within race.

Parity also appears to be related to age differences in rates of PIH in that most of the studies in which primigravidous adolescents and primigravidous older women were compared showed only small differences between the two age groups (Bochner, 1962; Hassans and Falls, 1964; Poma, 1981; Osbourne et al., 1981; Graham, 1981; Lee and Walters,

1983). The results of Coates (1970), Hulka and Schaaf (1964), and Duenholter et al. (1975) are exceptions to this general relationship. Coates' control sample included white women while the adolescent sample did not. Despite similar study designs, Hulka and Schaaf (1964) found a higher percentage of older mothers with PIH, while Duenholter et al. (1975) found a higher percentage among adolescent mothers. Both studies were limited by their definitions of PIH, and this limitation may account for their opposite results.

One reason for the particularly high rates of PIH in the study of Duenholter et al. (1975) may be their very young sample, adolescents aged 14 years or less. Battaglia et al. (1963), similarly, showed higher percentages with PIH in this age group compared with nonwhite primigravidas aged 15-19 years. The reasons for the elevated rates of PIH among the youngest adolescents are unclear, but they do not appear to be due to physical immaturity. Erkan et al. (1971) reported that the percentage of adolescents with preeclampsia (undefined) was greater among adolescents with a postmenarcheal age (PMA) less than 24 months, as measured by the difference between the given age at menarche and the date of last menstrual period (LMP), than among those with a PMA of 24 months or more, but the difference was not statistically significant. Hollingsworth et al. (1981) reported that hypertension (undefined) was related to race, but it was not associated with gynecologic age; they gave no definition for gynecologic age.

In two additional studies, inadequate prenatal care was investigated as a reason for the reported high rates of pregnancy complications among adolescents. McAnarney and her associates (1978) studied the Rochester Adolescent Maternity Program (RAMP), a program providing more prenatal visits and psychosocial services than two other study sites. They found no significant differences in the frequency of hypertension or preeclampsia among adolescents receiving services in the three sites, but their sample size was very small. Jorgensen (1972), on the other hand, found a marked drop in the percentage of adolescents with preeclampsia at Pennsylvania Hospital after introduction of an adolescent clinic; the clinic was developed on the premise that intensive prenatal care and health education would lower the risk of adolescent pregnancy. It is impossible to evaluate this before/after comparison since the characteristics of adolescents using the hospital before the clinic was introduced were not described and the availability of the clinic to all adolescents was not discussed.

Based on the studies reported here, it appears that much of the risk of preeclampsia or PIH associated with adolescent pregnancy may be due to a predominance of primigravidas and blacks among pregnant adolescents. There may be a somewhat elevated risk of PIH among the youngest adolescents, but this elevated risk does not appear to be a result of their physical immaturity.

Anemia During Pregnancy

Anemia is a frequently cited complication of adolescent childbearing. Yet, the evidence supporting this conclusion is very limited. Like PIH, anemia, is not uniformly defined in the adolescent pregnancy literature, although most investigators measure it by low hemoglobin or hematocrit levels. In many studies, these levels are not taken at a uniform time during pregnancy and for convenience are frequently measured at the time of registration for prenatal care. When comparing adolescents and older women, hematocrit or hemoglobin levels may vary simply because adolescents are more likely to begin prenatal care in the second trimester and hemoglobin levels drop in the normal pregnancy during this trimester.

The percentage of adolescents with anemia ranged from 0.8 to 19.7 percent in the studies reviewed. Even when the studies in which no definition of anemia was given (Bochner, 1962; Utian, 1967; and Poma, 1981) or a conservative definition was used (Spellacy et al., 1978) are excluded from comparisons, the range in estimates of adolescents with anemia during pregnancy is still large (3.6 to 19.7 percent).

In most of the studies, there was no difference in the percentage of women with anemia between adolescent and control women, even when no adjustment was made for difference by age in race or other potential confounding variables. Israel and Woutersz (1963) and Osbourne et al. (1981) were the only two investigators to report a significantly higher percentage of adolescent than older women with anemia. In contrast, although Hulka and Schaaf (1964) found no differences by age in antepartum anemia, the older control mothers more frequently had postpartum anemia than the adolescent mothers.

In a study of the incidence of folacin and iron deficiency among predominantly black, low income women, Bailey et al. (1980) found no age differences in mean hematocrit levels and serum and red blood cell levels of folacin taken at first prenatal visit. Serum iron concentration was significantly lower among the older women than among the adolescents and there was a trend for transferrin saturation to also be lower in older women. The authors suggested that iron depletion may be less in the adolescents because of their comparably shorter menstrual histories.

Israel and Woutersz (1963) noted a greater percentage of women with anemia among both nonwhite teenagers and controls than among all women delivering in 10 collaborative study institutions. Similarly, McGanity et al. (1969) found significantly lower mean hemoglobin, hematocrit and corpuscular hemoglobin concentration among black adolescents than among whites. Their mean plasma iron levels, however, were similar. McGanity et al. did not report the trimester during which these measures were taken.

In two final studies, the role of a special program for adolescents in reducing complications of pregnancy was evaluated. Neeson and her associates (1983) reported that on admission for labor, adolescents attending the Young Womens Clinic at University of California had hematocrits similar to older controls using the regular obstetrics clinic, but that teenagers using the regular clinic had significantly lower hematocrits. Similarly, Jorgensen (1972), reported that adolescents attending an adolescent clinic at the University of Pennsylvania were less likely to have anemia, as measured by a hemoglobin under 10.5 at delivery, than adolescents receiving care at the hospital before the clinic's inception. The possibility of self-selection of the adolescents into the special program cannot be ruled out as an explanation for the results of this latter study.

On balance, the literature does not suggest that anemia is a major complication of adolescent pregnancy. A high frequency of anemia among black adolescents may be cause for some concern by health care providers. Most studies are limited by small sample sizes, failure to measure anemia uniformly during pregnancy and almost complete absence of adjustment for confounding variables. With few exceptions (Bailey et al., 1980), these studies were not designed to specifically investigate differences in anemia between adolescent and older mothers and, accordingly, do not address normal physiologic changes in pregnancy.

Cesarean Sections and Cephalopelvic Disproportion

Cesarean delivery rates have been studied as a possible complication of adolescent childbearing, largely because of their indication as a method of delivery for women with cephalopelvic disproportion or contracted pelvis. Because of their young age, adolescents have been presumed to be more likely than older women to have cephalopelvic disproportion.

Among the studies reviewed, the majority show no difference in cesarean delivery rates between the adolescent and older control mothers. Nevertheless, several studies have shown the advantage to the adolescent (Briggs et al., 1962; Israel and Woutersz, 1963; Poma, 1981; Osborne et al., 1981; Neeson et al., 1983; Lee and Walters, 1983), but many of these studies did not exclude repeat cesareans or multiparous women from the control sample. Even among the more recent studies in which only primiparous women were studied (Duenholter et al., 1975; Poma, 1981; Osbourne et al., 1981; Graham, 1981; Lee and Walters, 1983), there were no differences in cesarean delivery rates for the two age groups or lower rates were reported for the adolescent. Excluding the study by Poma because it included only women with x-ray pelvimetry, estimates of cesarean delivery rates in the most recent U.S. studies (Duenholter et al., 1975; Spellacy et al., 1978; Neeson et al., 1983; Graham, 1981) range from 9.2 to 14.7 percent.

The incidence of contracted pelvis among adolescents and older control women was evaluated in some studies as a complication of pregnancy. With the exception of the work of Hulka and Schaaf (1964), these studies indicate an increased incidence of contracted pelvis among the adolescent group, particularly when x-ray pelvimetry was performed to diagnose the contracted pelvis. Duenholter et al. (1975) found significant differences only for contraction of the pelvic inlet of less than 85 percent of the normal area. Similarly, Poma (1982) reported that on admission for labor and delivery, there were no significant differences in the average diameter of the pelvic midplane and outlet between adolescent and older mothers, but the average pelvic inlet antereoposterior and transverse diameters were significantly lower for the adolescent. He argued that these differences were minimal and unlikely to be clinically meaningful. Cephalopelvic disproportion was the most frequent indication for cesarean births in his study sample, and it was given with similar frequency in both age groups (Poma, 1981).

Birth Weight and Gestational Age of Infants Born to Adolescent Mothers

Birth weight has received the most careful scientific scrutiny of all outcomes of adolescent childbearing. Many studies have reported a higher proportion of low birth weight (LBW) and lower mean birth weights of infants born to adolescents than those born to an older control sample. Maternal age differences in LBW rates and in mean birth weights may in part be explained by racial differences by age; black infants in general weigh less than white infants and pregnant adolescents are more likely to be black than older mothers. More recent studies suggest that not only race but other risk factors such as low socioeconomic status, lower prepregnancy weights and later initiation of prenatal care may also explain maternal age differences in birth weight.

Many of the early studies of adolescent pregnancy interchanged the terms prematurity and LBW. Currently, a premature infant refers to an infant born before week 37 of gestation and a LBW infant to one weighing 2500 grams or less at birth. Table 10 provides estimates of the percentage of LBW infants in 15 studies of pregnant adolescents; in the early studies it is assumed that prematurity referred to LBW. The percentage ranges from 6.3 to 23.3, with the majority of the studies reporting between 10 and 20 percent. The percentage of LBW infants is almost two times higher among nonwhite than white adolescents.

Many of the studies of obstetrical populations in the 1950s and 1960s showed significantly greater percentages of LBW infants among adolescents than older mothers (Hulka and Schaaf, 1964; Battaglia et al., 1963; Utian, 1967; and Jovanovic, 1972). Hulka and Schaaf and Battaglia et al. reported significant differences in spite of simi-

In three recent studies, Horon et al. (1983), Rothenberg and Varga (1981) and Zuckerman et al. (1983) found no significant difference in mean birth weights between infants born to adolescent mothers and infants born to older mothers, when adjustment was made for age differences in a number of confounding variables. Horon et al. found similar birth weights in spite of a higher percentage of clinic patients, unmarried women and women living in less affluent neighborhoods, and lower pregnancy weights, shorter statures, shorter gestations and later initiation of prenatal care among the adolescents than among the older controls. In the study by Zuckerman et al. (1983), the adolescent mothers began prenatal care later, had lower prepregnancy weights, had more gonorrheal infections during pregnancy, were more likely to be black, had fewer religious affiliations, were less likely to smoke, use psychoactive drugs or drink alcohol during pregnancy and were less likely to have had an x-ray during pregnancy than the older mothers. Rothenberg and Varga (1981) did not describe the differences between their adolescent and control sample. All investigators concluded that factors other than a young age were associated with low birth weight among pregnant adolescents.

The conclusion that a young age, per se, is not the reason for poor outcomes of adolescent pregnancies is supported only in part by studies of the relationship of gynecologic age and measures of fetal growth. Hollingsworth and her associates (1981) found no association of gynecologic age with birth weight, length of the infant, head circumference of the infant, or gestation. On the other hand, Erkan (1971) and Zlatnik and Burmeister (1977) found higher LBW rates among offspring of adolescents with a low gynecologic age than among offspring of more mature adolescents. The measure of gynecologic age used by Zlatnik and Burmeister was confounded with gestation since it was defined as the length of time between age at menarche and age at delivery.

The possible role of adequate or intensive prenatal care in reducing LBW rates among adolescents has received considerable attention. Neeson and her colleagues (1983), Jorgenson (1972), Zackler et al. (1969) and Felice et al. (1981) reported lower percentages of LBW infants born to adolescents attending an intensive prenatal care program than infants born to adolescents receiving routine prenatal care. Zackler et al. (1969) found the advantage of the program to be greatest for black adolescents. Neeson et al. also found birth weights to be similar for the adolescents in the Special Program and older women attending the regular obstetrics clinic. Although Felice and her associates (1981) raised the possibility of self-selection of teens into the special care program as a reason for their better outcomes, they dismissed it because of their study design. It cannot be ruled out as a possible explanation in their study or those of Jorgenson (1972) and Zackler et al. (1969). McAnarney and her associates (1978) did not find differences in mean birth weights or length of gestation of offspring of adolescents served in three different sites.

larities between the adolescent and control group on race and parity. On the other hand, Briggs (1962), Bochner (1962), Coates (1970) and Semmens (1965) reported no significant differences in the proportion of LBW infants between adolescents and their controls. In more recent studies (Duenholter et al., 1975; Spellacy et al., 1978; Poma, 1981; Osbourne et al., 1981; Graham, 1981; Lee and Walters, 1983), only Spellacy and his colleagues found a significantly greater percentage of LBW infants born to adolescent mothers than to older mothers. The elevated percentage for infants of adolescent mothers held when only black women were compared. Most other studies have shown greater variation in LBW rates between whites and nonwhites within age groups than between adolescent and older mothers within racial groups (Graham, 1981; Haskin, 1963; Israel and Woutersz, 1963).

The risk of LBW among adolescents appears to increase with the number of previous births of the mother (Graham, 1981; Israel and Deutschberger, 1964; Jekel et al., 1975). Graham (1981) also reported a higher percentage of preterm births among multiparous adolescents than older multiparas. A number of investigators (Hulka and Schaaf, 1964; Israel and Deutschberger, 1964; Utian, 1967) have also reported a greater percentage of pregnancies ending before 37 weeks of gestation among adolescents than older controls. On the other hand, Poma (1981) did not find any significant differences by age in length of pregnancy. Both Poma (1981) and Hulka and Schaff (1964) only studied primigravidas. Garn and Petzold (1983) found no relationship between maternal age and mean length of gestation using data from the National Collaborative Perinatal Project, but the percentage of pregnancies ending before 38 weeks varied inversely with age, as did the percentage of LBW infants. While these results supported previous studies of age variations in birth weight and measures of maturity of infants at birth, they provided little explanation for these variations.

Naeye (1981) also analyzed the data from the Collaborative Perinatal Study to determine if young teenage mothers have slower rates of fetal growth than older mothers. He included black singleton infants whose mothers were between 10 and 32 years of age and whose infants were born between 38 and 44 weeks of pregnancy. Among under weight and normal weight mothers, mean birth weights were significantly lower for the adolescent than for the older mothers across most weight gain groups. Although Naeye concluded that fetuses of most 10-16 year olds grow more slowly than those of older mothers, this conclusion was presumptous in that births before 38 weeks gestation were not included.

Horon et al. (1983) have recently shown that birth weights of premature infants born to young adolescents were significantly greater than birth weights of premature infants born to older mothers. Because their premature infants weighed more than those of the older mother, the infants of the adolescents in their sample, on average, had similar birth weights to the infants of older mothers despite a greater frequency of premature births among the adolescents.

The elevated risk of delivering a LBW infant among adolescents appears to be due to a preponderance of other risk factors among the adolescent. Exactly which other risk factors remain in question, however, as does possible differences in the growth rate of the fetuses of adolescents and older mothers. Both areas warrant future research. The LBW infant, in addition to experiencing an increased risk of neonatal death, is more likely than the normal weight infant to succumb to a variety of problems (Shapiro et al., 1980). Prevention of LBW infants among adolescents and at all maternal ages is a major public health priority.

Perinatal, Neonatal and Infant Mortality Among the Offspring of Adolescent Mothers

Maternal age differences in perinatal, neonatal and infant mortality have been investigated in a number of the studies including cross-sectional studies of births occurring in a geographic area. These latter studies have generally used linked birth and death certificates as the source of data. These data have the major advantage of being available for all births in a geographic area but the major disadvantage of containing limited information.

Israel and Woutersz (1963), Osbourne et al. (1981); Graham et al. (1981) and Duenholter et al. (1975) found no significant differences in perinatal mortality rates between infants born to adolescent mothers and infants born to older mothers. Duenholter et al. (1975) also found no significant maternal age differences in neonatal mortality rates. On the other hand, Battaglia et al. (1963) reported a higher perinatal mortality rate for nonwhite infants born to mothers under 15 than for all nonwhite infants born in Baltimore City, but the higher rate was due almost entirely to the greater frequency of infants weighing under 1000 grams among the young mothers. Similarly, Hulka and Schaaf (1964) noted an elevated neonatal mortality rate among infants born to adolescents that was due to LBW infants. Israel and Woutersz (1963) also found greater neonatal mortality rates among offspring of teenage mothers, but differences in rates were less by age than by race. In several additional studies, the number of perinatal or neonatal deaths was too small to evaluate maternal age differences (Utian, 1967; Coates, 1970; Spellacy et al., 1978; Poma, 1981; Lee and Walters, 1983).

Dott and Fort (1975; 1976) found a J-shaped relationship between maternal age and perinatal mortality among 1972 Louisiana births. The risk of a neonatal death was greater for the offspring of the very young and elderly mothers than for the offspring of women in their twenties. Varva and Querec (1973) reported a U-shaped relationship between age of mother and mortality rates for deaths occurring in the first day of life, the first week of life and from day 7 to 27, using data from the 1960 U.S. birth cohort study. Postneonatal death rates were highest for infants of teenagers. In Louisiana, they were high-

est for infants born to mothers aged 10-14 years, followed by infants of 15-19 year old mothers (Dott and Fort, 1975). Within the teenage births, infant mortality rates were higher for infants of married women than for infants of unmarried women.

Varva and Querec (1973) found differences in the relationship of maternal age to infant mortality by birth order. As with LBW rates, infant mortality rates were elevated for second and higher order births to teenage mothers. Jekel et al. (1975) also reported a higher perinatal mortality rate for higher pregnancy order births among adolescents.

In contrast to several of the above studies, the classic study of Shah and Abbey (1971) indicated no maternal age effect on neonatal mortality when adjustment was made for birth weight differences by age. However, next to birth weight, maternal age and parity showed the strongest relationship with postneonatal mortality. Moreover, adjustment for parity increased the risk of postneonatal mortality for infants born to mothers less than 20. Thus, the results of Shah and Abbey showed that maternal age was an important predictor of infant death only in the postneonatal period. It appears that much of the risk of elevated neonatal mortality rates among infants born to adolescent mothers is due to the increased proportion of LBW infants born to these mothers.

Neonatal and First-Year Morbidity Among Offspring of Adolescent Mothers

The relationship of maternal age with morbidity in the newborn or the infant during the first year of life has been much less extensively studied than birth weight or mortality. There is some evidence of an elevated risk of morbidity among infants of young mothers, but the variation by maternal age is less than reported for LBW rates.

Garn and Petzold (1983), Osbourne et al. (1981) and Poma (1981) found no consistent relationship between maternal age and the percentage of infants with low Apgar scores. Zuckerman et al. (1983) and Finkelstein et al. (1982) noted lower one minute Apgar scores among infants of adolescent mothers than among infants of older mothers, but five minute scores were similar. Neeson et al. (1983) reported similar results for infants of teenagers receiving care in the regular obstetrics clinic compared with infants of older mothers receiving care there or infants of teenagers in a special program. Only Rothenberg and Varga (1981) found lower five minute Apgar scores for infants of adolescent mothers, but the association of Apgar scores with maternal age was weak. There appears to be little association between a young age of childbearing and other measures of neonatal morbidity, including conjunctivitis, omphalitis, septicemia, skin infections, convulsive disorders, intracranial hemorrhage, hyaline membrane disease, excessive weight loss, duration of nursery stay (Duenholter et al., 1975) and jaundice (Osbourne et al., 1981).

Morbidity during the first year of life has been investigated in relation to maternal age in a number of recent studies (Hendershot, 1979; Shapiro et al., 1980; Smolen et al., 1984; Rothenberg and Varga, 1981; Finkelstein et al., 1982). In a study of 4,327 surviving infants born in 8 geographic regions in the United States in 1975, Shapiro et al. (1980) reported that infants of women under 18 years at the time of their birth had more significant illnesses during the first year and greater rates of postneonatal death, especially if they were LBW. Morbidity data were collected through a household interview. Finkelstein et al. (1981) also reported significantly more acute episodes of illness among the offspring of white adolescents than the offspring of older white mothers. Hendershot (1979) reported more hospitalizations among infants of mothers under 20 than infants of mothers 20 or older among ever-married, primiparous U.S. women included in Cycle I of the 1973 National Survey of Family Growth.

Rothenberg and Varga (1981) and Smolen et al. (1984), on the other hand, found no differences in reports of hospitalization or the need to see a physician regularly for a medical problem in their children for adolescent and older mothers. However, Rothenberg and Varga reported more burns and injurious conditions for infants of adolescent mothers than for infants of older mothers. Wicklund et al. (1984) also have recently reported higher rates of fatal infant accidents for the offspring of mothers under 20 than for those of mothers over twenty in North Carolina and Washington State. Maternal age differences in rates remained within race and education groups when standardized for parity.

Smolen et al. (1984) noted a greater percentage of the infants of adolescent mothers below the fifth percentile for weight gain, while the infants of older mothers had significantly more clinic visits for medical problems. In contrast, Finkelstein et al. (1982) found no maternal age difference in mean heights or weights of children during the first two years of life.

There appears to be only limited evidence of an increased risk of morbidity for infants of young mothers. This evidence suggests that accidental injuries may be more frequent among offspring of adolescent mothers. The differences in morbidity by maternal age are small even when reported in large cross-sectional studies (Shapiro et al., 1980; Hendershot, 1979). Most other studies are limited by small sample sizes or sampling methods that may have resulted in a biased adolescent sample or an inappropriate control sample.

CONCLUSIONS

This review of the literature indicates that rates of sexually transmitted diseases rose from adolescents during the 1970s, and for some infections, such as genital herpes or chlamydial infections, they could continue to climb. The risk of gonorrhea, syphilis, and

chlamydial infections is highest among the teenager, particularly when rates are estimated for sexually experienced women. Although the possibility of an increased biological susceptibility to sexually transmitted infections has been related to age differences in the location of cervical columnar epithelial tissue, the role of age differences in patterns of sexual behavior in explaining elevated rates among adolescents remains to be explored. The risk of genital herpes and genital warts among adolescents has not been described and is an area for future research, especially given the devastating effects of herpetic infections in the newborn and the clear role of human papillomavirus in cervical cancer. N. gonorrhoeae and C. trachomatis have been implicated in pelvic inflammatory disease and its consequences of infertility and ectopic pregnancy; both have been increasing recently among young black women.

Complications following induced abortion are generally lower among adolescents than older women, regardless of the gestation at which the abortion was performed or the method used. Two exceptions are cervical injury and death-to-case rates from sepsis which are more frequent among teenagers. If there is an increased risk of unfavorable outcomes in pregnancies following an induced abortion, the risk is small. Even for second trimester abortions, where the evidence to date is most convincing, the increased risk following induced abortion is at most twofold, if it exists at all. The risk of second trimester abortion rises somewhat with increasing numbers of prior induced abortions. Much of the risk of subsequent unfavorable outcomes of pregnancy following induced abortion appears to be associated with differing characteristics of women with and without a history of induced abortion. Whether a young age at the time of the abortion confers an increased risk of subsequent unfavorable pregnancy outcomes has not been studied.

Most recent research indicates that the elevated risk of poor pregnancy outcomes among adolescents is most likely explained by a preponderance of risk factors among young mothers. Although race, primiparity and poor prenatal care have been suggested as possible risk factors, research is still needed to specify the factors that are most likely to explain their increased risk of poor outcomes. High rates of perinatal and neonatal deaths have been associated with high LBW rates among adolescents. However, an elevated risk of postneonatal deaths among the offspring of adolescent mothers appears to be independent of age differences in birth weight. The research on early childhood morbidity is too limited to determine whether this increased risk extends to morbidity as well.

CHAPTER 6

SOCIAL AND ECONOMIC CONSEQUENCES OF TEENAGE CHILDBEARING

Sandra L. Hofferth

INTRODUCTION

The assumption of active parenting significantly changes a young woman's or man's life. As discussed in previous chapters, caring for an infant takes time and energy which is therefore not available for other activities. Although parents are never fully prepared, those who are married, with a regularly employed wage earner and a reasonably stable existence generally have the resources to cope adequately. The demands of parenthood must come as a shock to the unmarried teenager who is enrolled in school, who is dependent on her parents, and who knows very little about caring for children.

The first part of this chapter focuses on the long term consequences of early childbearing for the mother, the father, and other family members. The major objective is to compare some ten years after high school the economic situation of young women and men who bore (fathered) a child as a teen with that of others who delayed childbearing until their twenties. The questions that will be addressed are the following:

1. Are there effects of early childbearing on the later social and economic well-being of the mother, the father, and other family members net of initial differences between early and later childbearers?

2. If there are effects, how do they operate? That is, through what mechanisms or intervening factors do they operate?

3. Have these effects changed over time such that early childbearing has more (or less) serious consequences for recent birth cohorts of young women and men than for earlier birth cohorts of young women and men?

Research has shown substantial variation among early childbearers in economic well-being, and it is important to know why some do well and others don't. Thus an additional question will be addressed:

4. Among early childbearers themselves, what factors differentiate those who are doing well from those who are not doing well?

Part Two focuses on the consequences of early childbearing for society. Finally, Part Three focuses on the hypothetical impact of policy interventions.

The perspective used in this chapter is that of the life course, "the social patterns in the timing, duration, spacing and order of events" (Elder, 1978:21). One of the central features is the notion of "multiple interdependent pathways (career lines) from birth to death" (Elder, 1978:22). Such career lines occur in the marital, parental, and socioeconomic spheres. The relationship between the timing of events in these different spheres represents an important characteristic of individuals. There are also regular patterns across individuals. For example, a majority follow a common pattern regarding timing of school leaving, entry into employment, marriage and childbearing (see for example, Hogan, 1980). "With multiple career lines, the scheduling of events and obligations becomes a basic problem in the management of resources and pressures" (Elder, 1978:27).

Parenthood is an event that radically affects the life of the mother. The demands of a child simply cannot be ignored without risk. Thus the timing of parenthood relative to other career lines is a major concern. In this chapter we will consider schooling, marriage, and employment as other interdependent career lines and explore the interrelationships among events in these different domains. The ultimate test of the importance of timing and sequencing of events is the economic circumstances of the individual at some later point in life, in particular, own income, income of other family members, poverty status and welfare dependence.

Direct Versus Indirect and Total Effects

Just because research identifies no direct causal connection between two variables, for example, between the age at which a woman has her first birth and family income, for example, does not mean there is no association at all. For example, if an early first birth is associated with reduced schooling, which is, in turn, associated with lower earnings, and lower income, then an early first birth is indirectly associated with lower family income later on. The total of the direct impacts of age at first birth and its indirect impacts through other variables is called the total effect of age at first birth. The pathways through which a variable such as age at first birth affects variables later in life explain the impage of age at first birth. That is, they explain how it can affect later well-being without there being any direct causal connection.

Measurement of Early Childbearing

Most of the studies referred to in this chapter measure the age at which the young woman or man bore (fathered) a first child in single years of age. This is then associated in a statistical analysis with education, number of children or family income. The coefficients reported, therefore, show what difference there is in years of schooling, for example, between youth who differ by one year of age at first birth. The assumption of the model is that the effect of delaying a birth for one year is the same whether a young man or woman delays from 16 to 17, from age 20 to 21, or from age 26 to 27. This is a strong assumption, and one that may not necessarily be true. As an alternative, then, some of the models looked only at a subsample of teenagers. In this case, using the same age measure, the results indicate the difference that delaying a birth for one year during the teens years makes in the outcome measure. This may be more useful in policy terms, but it then does not compare teenage with older childbearers.

Another way to compare the effects of teen versus older childbearers would be to simply dichotomize at age 19, for example, and compare the socioeconomic status of those with a first birth at or before age 19 and those with a first birth after age 19. The choice of the cutoff point then becomes an issue, since it may greatly affect the results. None of the studies cited here dichotomized the age at first birth variable.

Given the fact that the models included here are linear models, in addition, the types of relationships between age at first birth and socioeconomic outcomes are severely constrained. The reader therefore is cautioned that the research reported here, while of very high quality, is limited in its sensitivity to complex relationships.

CONSEQUENCES FOR THE MOTHER, FATHER AND OTHER FAMILY MEMBERS

The first question is how, once they have reached their late twenties and early thirties, do women and men who had their first child before twenty and those who had it after age twenty compare on economic well-being? Which events and domains account for most of the relationship we find? Second, among early childbearers not all are doing poorly. What determines differential adaptation? Some potential explanatory factors include a) individual differences in background, aspirations, motivation and ability, b) resources: family socioeconomic status, informal support networks; c) formal programs of social intervention, and d) career contingencies: other events occurring around the time of the birth in other career lines--e.g., marriage, employment, schooling. Most of this research focuses on young women; relevant data for young men are presented where available.

Schooling

The most general sequence of schooling, marriage and childbearing is that of completion of schooling, marriage, and then childbearing. In this section we will focus particularly on the timing/sequencing pattern in which childbearing precedes school completion. Because of the time and energy that raising children require, which interferes with the time and energy required to study and attend classes, women who bear a child during the school years often leave before they can complete their schooling. This is especially the case for those who bear a child during the high school years. Results from a number of studies show that young women who bear a child as teenagers are substantially less likely to complete high school than those who bear a child later on. All the studies reviewed show that early childbearers exhibit a substantial educational deficit relative to later childbearers.

However, studies have also found substantial preexisting differences between early and later childbearers, differences that may explain the difference in completed schooling. Card and Wise (1978) for example, found that young women who bear a child while in high school not only were of lower socioeconomic status when they were in ninth grade, but already had lower academic abilities and lower educational expectations than their classmates, factors which also predict poor school performance and poor later life chances. With the exception of one study (Rindfuss et al., 1980), every study that has been able to control for initial differences between early and later childbearers (Card and Wise, 1978; Haggstrom et al., 1981, 1983; Koo and Bilsborrow, 1979; Hofferth and Moore, 1979; Marini, 1984) has found an additional impact of having an early birth. Thus the bulk of the evidence is that there is an additional impact on school completion of having a child at an early age above and beyond the impact of the initial disadvantaged situation of those who tend to have births at an early age. The impact of an early birth has also been shown to be greatest during the high school years (Hofferth and Moore, 1979). This does not negate the fact that some young women do drop out of school physically or even mentally far before bearing their first child. There is evidence that a sizeable proportion (one-quarter to one-third) dropped out prior to a first pregnancy (Morrison, 1984). However, even among those with poor school records, those who have a first birth while in high school face even greater odds against completing their schooling than those who delay that first birth for several years.

Some attention has been given to the issue of whether the relationship between schooling and dropping out of school has changed over time. The Card and Wise study looked at the earliest birth cohorts--born in 1942-43 and 1945-46. The Hofferth and Moore study looked at birth cohorts 1944-54, while the Haggstrom et al. study looked at a cohort born in 1954, approximately. It is possible that some of the differences between the results are due to changes over time. Mott and

Maxwell, for example, found that young women were more likely to stay in school following a first birth in 1979 than they were in the late 1960's. However, this does not reduce the disadvantage they suffer. McCarthy and Radish (1982) show that even though early childbearers complete more schooling than they used to, their childless peers are also completing more schooling. Thus they are not better off in relation to their peers. Since so much reliance is placed on schooling today, they may be even worse off. One study suggests that a small additional amount of schooling for these young women does not boost their earning power enough to keep them from needing public assistance (Moore and Wertheimer, 1982). How much schooling and what type is needed to make a significant difference in their economic well-being would appear to be valuable questions to answer.

There are several other issues here. First, what are the factors mediating whether an adolescent childbearer remains in school or not? One of these is the legal system. Until the mid 1970s, young pregnant women were often not permitted to remain in school. Title IX of the Education Amendments of 1972, which was implemented in 1975, prohibits discrimination because of pregnancy or parenting status in publicly supported educational programs. Schools make a variety of arrangements for the schooling of pregnant students, from keeping them in regular classes to providing separate programs (Zellman, 1982). Although these efforts vary in quality, they appear to have had a substantial impact on school completion (Mott and Maxwell, 1981). However, even so, caring for a young baby puts an enormous burden on a young women. What other factors have been shown to be associated with keeping a pregnant adolescent in school?

Family support has been shown to be important to whether or not an adolescent childbearer remains in school (Furstenberg and Crawford, 1978). Those who do not marry and who remain at home with their parents are more likely to complete high school than either those who do not marry but move way from home or those who marry.

Enrollment in special school programs may also affect school completion. In their 17 year follow-up of adolescent childbearers, Furstenberg and Brooks-Gunn (1985) found a strong association between staying in school and attending a special school for teen mothers. Since adolescents who had higher ambitions were much more likely to participate in the special program than to stay in the regular school, and more highly motivated adolescents did better later on regardless of the type of school, this may explain their differential school continuation. However, after controlling for its selective attraction to motivated adolescents, Furstenberg found that the association between attending the school and later well-being remained strong (Furstenberg and Brooks-Gunn, 1985). Those in the special school for pregnant girls did substantially better in later life than those attending a regular school program (and those who dropped out).

An important issue, one which has not received much research attention is that of identifying factors associated with whether or not a young woman who has had an early birth and has dropped out of school returns to complete her schooling. Research evidence suggests that at least during the first decade after a birth, early childbearers (who have dropped out) do not return to school at a higher rate than those also out of school but who have not had a first birth (Moore et al., 1978:29-30). Thus they are not likely to catch up. Research comparing early childbearers and delayers at a later point in the life cycle shows that although a substantial proportion of pregnant adolescents do drop out, a substantial proportion do eventually return to complete additional schooling or receive a GED (Furstenberg and Brooks-Gunn, 1985; Mott and Marsiglio, 1985). Unfortunately, the evidence shows that a year of school attendance is not associated with completing an additional year of education (Furstenberg and Brooks-Gunn, 1985). Thus, although early childbearers do return to school, it takes a lot longer for them to complete a year of schooling than it does for those who did not drop out. In addition a GED may not be as advantageous as a high school diploma. Given initial differences and the cumulation of disadvantage, it seems unlikely that early childbearers will return to school at higher enough rates after their children are grown than later childbearers to reduce their relative disadvantage. The data show a declining difference in educational attainment with age, but one which remains substantial and which does not disappear (Card and Wise, 1978). If, in fact, as has been suggested by other research (Card, 1981; Newcomer and Udry, 1984), their daughters bear children at early ages too, these mothers may continue to have childrearing duties for many more years.

Although most research has focused on females, there is reason to believe that fathering a child may also have consequences for males. Are men who father a child at an early age more likely to drop out of school? If so, do they eventually receive accreditation in the form of a GED? Is ever fathering a child associated with less schooling or are any effects limited to those who live with their children? Finally, are the differences due to substantial preexisting differences or to the early birth itself. Card and Wise (1978) showed that half of all women and seven out of ten men who had borne a child before age 18 completed high school by age 29, compared with almost all who delayed childbearing until their early twenties. The differences among early and late fathering males are less striking than among early and later childbearers (female), but nonetheless are important.

A recent analysis (Marsiglio, 1986) based on the National Longitudinal Survey of Youth, waves 1979-1983, also found, net of factors such as parental education, family structure, race, region and religion, that young men who reported fathering a child during their teen years had completed significantly fewer years of schooling by 1983 than those who did not report having fathered a child. This research, however, did not control for differential IQ and aspirations among fathers and nonfathers. Thus it cannot be concluded that this effect

is due only to the birth of the child. The authors failed to find evidence that living with a child has more impact on a father than ever having fathered a child. However, given the high degree of instability of living arrangements of young parents, this may not be surprising. It would be helpful to have information on whether the father is, in fact, in touch with the mother of the child and whether the father contributes to the support of that child.

Parenthood

All the evidence supports the conclusion that early childbearers have more children, especially more unwanted children, and that they have them more rapidly than older childbearers (Trussell and Menhen, 1978; Furstenberg, 1976; Prosser, 1976; Moore and Hofferth, 1978; Koo and Suchindren, 1979; Bumpass et al., 1978). The issue of whether this relationship has changed over time is an important one. There is evidence that the difference between the earliest and later childbearers is declining with more recent birth cohorts as a result of greater fertility declines among teen mothers (Millman and Hendershot, 1980). If this result holds up it will be an important one, since the difference in family size is the largest and clearest difference between early and later childbearers, and, as we shall see in the following pages, has the most implications for later well-being.

How can the difference between early and later childbearers in family size be explained? One potential explanation is that early childbearers have a longer period of exposure to childbearing. However, the difference in family size by age at first birth holds even controlling for length of exposure (Trussell and Menken, 1978). A second possible explanation is that the youngest women are the least likely to have used contraception at first intercourse and least likely to use it consistently thereafter. This does appear to be supported by research evidence (Zelnik et al., 1981). A third possible, but untested, explanation is that young women who start their families early are familistic in orientation and want to have larger families. This could be the case for those who intended the first birth; however, this accounts for only a minority of teenage first births--23 percent according to Zelnik and Kantner (1978). A fourth possible explanation is that early childbearers are less able to take a future orientation and to plan. As a result they have more unwanted pregnancies across the life span (Cvetkovich, 1980). This hypothesis has not been tested.

It is clear that differential schooling also increases the gap between early and later childbearers in family size. Research has found evidence that young women with more schooling are better contraceptors, and, therefore, are better able to limit their family size. They also desire fewer children. Thus, the age at which a woman has a first birth indirectly affects family size through the schooling she obtains.

What factors differentiate early childbearers who have large and small families? When Furstenberg and Brooks-Gunn (1985) went back and reinterviewed their adolescent mothers after 17 years, they found, in contrast to what they expected, that only a relatively small proportion had gone on to have large families. Most had been able to control their fertility. The method that they used was sterilization; about half of these mothers had been sterilized for contraceptive purposes. Thus the fertility of these mothers was comparable to that of delayed childbearers in other surveys. Those young women who were able to control their fertility and, therefore, had the fewest children at the 17 year follow-up, were those who had been at grade for age, who had had high educational aspirations, who used birth control, who were enrolled in school, who delayed a second birth, and who were not married at the five year follow-up. Those who attended a special school and those who were in a special hospital program were more likely to use birth control and, as a result, likely to have a small family 17 years later.

Although early childbearers have larger families than later childbearers, hypotheses reasons for this association have not been tested. Recent research (Heckman et al., 1985) suggests that differences between early and later childbearers that existed prior to the first birth may explain the association. If so then what these differences are need further exploration.

Finally, no research in the consequences of early childbearing on family size have been conducted on males. Such analysis depends on reports of births, and males substantially under report such events. The quality of male data needs further study (see Marsiglio, 1986).

Marriage and Marital Dissolution

There is a very strong relationship between marital and parenthood careers. Although the most common sequencing pattern is for marriage to precede pregnancy and birth, premarital pregnancy, marriage and a postmarital birth has not been uncommon. A pattern of increasing importance is that of a birth followed by marriage. There is a strong relationship for whites between the age at which a woman has her first child and her age at first marriage; the relationship is weaker for blacks. Wertheimer and Moore (1982) showed that a birth to a woman aged 15 to 17 increased the probability that she would marry from .075 to .240 if she was white and from .056 to .110 if she was black. Recent data show that 96.5 percent of firstborn black babies to women 15 to 19 were conceived out-of-wedlock in 1980-81, compared with 64.4 percent of first born white babies to women 15 to 19, and 87.9 percent of black mothers and 36.8 percent of white mothers were still single at birth (O'Connell and Rogers, 1984). The proportion who have married within 2 years is also smaller for blacks and whites. Among those who eventually marry, whites marry much sooner than blacks. According to recent data, 53 percent of whites (who eventually marry) were married in 3 years, compared with 29 percent of blacks. Data also suggest that

the longer the period of time between birth and marriage, the less likely the mother is to marry the father of the child (Furstenberg, 1976). Thus young women who have an early first birth are more likely to marry soon thereafter, although this relationship appears to have weakened over the past decade and to be especially weak for blacks.

The first question is what is the effect of an early birth on marital disruption, relative to that of an early marriage? There are several possible hypotheses as to the effect of the timing of marriage relative to a birth on disruption. First, the literature to date shows that an early marriage is consistently associated with divorce or separation (Glick and Norton, 1977; McCarthy and Menken, 1979; Weed, 1974; Bumpass and Sweet, 1972). The intervening mechanism may be the youthfulness of the partners, their lack of experience with other potential partners, and the extent to which they have yet to experience important adult transitions. In contrast, some research finds (Furstenburg, 1976; Card and Wise, 1978; Furstenburg and Brooks-Gunn, 1985; McCarthy and Menken, 1979) that an early birth increases divorce and separation for men and women. The mixed evidence may be due to a related phenomenon. During the early years of marriage, couples with a young child have a substantially lower probability of divorce relative to childless couples. The presence of a young child appears to depress divorce, at least during the early years of a marriage. It is hard to disentangle the influences of an early marriage and an early birth, since marriage and childbearing are tied so closely together, especially for whites. The relative influence of early marriage and early birth cannot be tested among whites, for example, because these factors are so highly associated. However, this hypothesis might better be tested among blacks since blacks have a much lower probability of marrying soon after a first pregnancy (and after a first birth) and are unlikely to marry before pregnancy (teenagers). That is, among black teens, a pregnancy is much less likely to precipitate an early marriage. In fact, it is only among blacks that an early first birth is associated with later marital disruption, net of early marriage (Moore and Waite, 1981). Thus it is still too early to rule out an additional impact of a premarital birth or of a short birth interval.

However, it is possible to tease out the differential impact of marriage timing among those who bear a first child as teenagers. Young women and men who marry soon after a pregnancy may be better off than those who wait until after the birth; however, they may be more likely to divorce than those who marry later, which may make them even less secure economically. Probably the most important question is what is the differential divorce proneness of marriages contracted before pregnancy, after pregnancy but before a birth, and after a first birth? Research shows that teenage mothers are less likely to experience a marital separation if they marry before the birth than if they marry after the birth; there is little difference in divorce probability between those who marry before versus after becoming pregnant (but before the birth)(McLaughlin et al., 1984). Differences in divorce probabilities by marriage timing are relatively short term for blacks, but have

longer term effects for whites. The impact of marriage timing appears to be declining over time, as it had no impact on divorce/separation among recent birth cohorts of young women.

What are the potential explanations of the differential impact of marriage timing? First, young women and men who marry before the birth may be different from those who don't in ways that affect marital stability. In particular, they may be more committed to their partner, in more stable situations, and so on. The researchers controlled for a variety of background factors that could potentially also be associated with disruption (McLaughlin et al., 1984). Thus the possibility of other differences, while still present because of the limited nature of variables that are available, is minimized.

A second possible explanation is differential schooling. The amount of schooling the young woman had attained at marriage was not associated with the probability of separation, however (McLaughlin et al., 1984). One factor that was associated with a higher probability of separation was whether the first birth was unwanted or mistimed. An unwanted or mistimed first birth was associated with a higher probability of divorce or separation.

Furstenberg and Gunn (1985) found substantial marital instability among their adolescent childbearers. Almost all eventually married--78 percent. However, about 2/3 of first marriages ended; by 17 years after the first birth only 26 percent of the sample were currently married in a first marriage. Two fifths were previously married, and 8 percent were currently married in a second or later marriage. The authors concluded that adolescent parenthood seriously damages a women's prospects for a stable marital union. What is not known is why this relationship holds--whether it is due to the child or to other factors that affect both marital instabilityn and early childbearing. Finally, very little is known about the characteristics (and prospects) of the men these early childbearers marry or could marry.

Work

Labor Force Participation and Hours Worked

The research suggests that the age at which childbearing begins is not as important as the length of time since the (most recent) birth in influencing whether or not a woman works. Having a young child consistently lowers labor force participation, whereas an early birth does not. Of the three studies that have specifically addressed this issue, one (Koo and Bilsborrow, 1980) finds no effect of early childbearing while two studies find a weak positive effect of early childbearing on labor force participation (Hofferth et al., 1978; Card, 1979). In these studies early childbearers (female) appear to be somewhat more likely to be in the labor force 10 years after high school than later childbearers. This is probably due to several factors: 1) Since early

childbearers start their families early, at 1 and 5 years after high school fewer early than later childbearers are working (Card, 1977). Ten years after high school, however, their children are older while later childbearers have just begun their families and have young children in the home. Thus the early childbearers were more likely to be working 10 years after high school in the Card study and at age 24 in the Hofferth et al. study. 2) Early childbearers may have a greater economic need to work. Never married mothers who had an early birth have a high likelihood of being employed (Haggstrom et al., 1981). In a related study Trussell and Abowd (1979) also found that among whites increasing age at first birth lowers the propensity to work by raising the wage required to attract them into the work force.

There are sex differences in the association between early childbearing and employment. At 1 and 5 years out of high school more males in the adolescent childbearer group were working, compared to their classmates (Card, 1977). Thus for males, each parenthood leads to entrance into the labor force. However, by 11 years out, these differences had disappeared. By 11 years after high school most nonparenting males had also completed their schooling and entered the work force so the difference disappears.

Females, in contrast, work less while they have young children in the home, but as their children mature, they return to work. Thus the timing of the birth affects when that hiatus will occur. By the mid twenties, the later childbearers are beginning their families and dropping out of the work force while the early childbearers are reentering.

Work Experience

This is the only area in which there is any disagreement among the various studies, and this disagreement is not hard to resolve. Two studies (McLaughlin, 1977, and Koo and Bilsborrow, 1979) found that, controlling for age, education and socioeconomic background, early childbearers accumulated more experience after the birth of the first child (McLaughlin) or after marriage (Koo and Bilsborrow) than later ones. McLaughlin and Koo and Bilsborrow hypothesize that early childbearers have a greater economic need to work than later ones. In contrast, Hofferth et al. (1978) show no relationship between age at first birth and proportion of years worked since age 18 by age 24, net of other factors. In a study that looks at work experience at age 27, Hofferth and Moore (1979) found that later childbearers actually have accumulated more work experience since age 18. Again, these differences are probably a function of the time period over which experience is measured. The former two studies looked only at experience following a birth or marriage while the latter looked at experience since age 18. Later childbearers probably worked more than early childbearers prior to marriage/birth, while less following marriage/birth. Thus the differences in results between the several studies are explainable. Experience depends on where you start to accumulate it. No comparable data are available for males.

Occupational Status

Researchers have measured occupational status in a variety of ways: the National Opinion Research Center's Occupational Prestige Scale and the Duncan Socioeconomic Index (SEI) are the most common. In general, researchers find no direct effect of a woman's age at first birth on later occupational status or prestige. Koo and Bilsborrow found no impact of age at first birth on occupational prestige scores of women 35 to 39 and 40 to 44 in 1973, controlling for a variety of background factors, education and work experience. Using the Duncan Socioeconomic Index (SEI) Hofferth et al. (1978) found no different between early and later childbearers at age 24 in occupational prestige. Haggstrom et al. (1981) found that scores on a career index similar to the SEI differed little by birth timing.

McLaughlin (1977) used measures of earning potential in the short term and the long term, as he called them. The short term measure was the median 1959 earnings of all women working full-time in the first job held at least 6 months within the first five years after the first birth. The long term earning potential was median 1959 earnings of all women working full time in the occupation held currently or most recently for at least six months. For both measures there was a positive but non-significant direct impact of age at first birth net of education, experience and socioeconomic status.

Finally, Koo and Bilsborrow (1979) also failed to find any direct impact of age at first birth on the husband's occupational status.

Even though no direct effect of age at first birth on occupational status was found, there do appear to be some indirect effects. Card (1977) found age at first birth to be a determinant of occupational prestige for both men and women 11 years out of high school, net of background factors such as race, SES, aptitude and educational plans held in high school. A stronger relationship was found for women than for men. Other research has shown a strong relationship between educational attainment and occupational status, and between work experience and occupational status (McLaughlin, 1977). To the extent that age at first birth reduces schooling completed, it is likely to reduce occupational status later on. The effects of age at first birth on work experience are somewhat unclear. McLaughlin (1977) concluded that the strongest indirect effect operates through education.

Economic Well-Being

Women's Hourly Wages and Annual Earnings

The evidence is consistent across all studies: there is no direct impact of early childbearing on women's hourly wages Hofferth et al., 1978; McLaughlin, 1977; Koo and Bilsborrow, 1979; and Trussell and

Abowd, 1979). The same appears to hold for males (Haggstrom et al., 1981).

The evidence consistently finds no direct impact of the age at first birth on female earnings, net of other factors (Koo and Bilsborrow, 1979; Hofferth et al., 1978; McLaughlin, 1977; Haggstrom et al., 1981). However, there do appear to be indirect effects. Card (1977) found that with only controls for background variables, adolescent childbearers earned less than later childbearers or those childless at all follow-ups. Other researchers have specified these intervening effects. An early birth increases family size, which reduces the proportion of years worked and the hours worked last year, which reduces earnings at age 27. At early birth reduces schooling, which reduces the proportion of years worked and reduces hours and earnings at age 27. Adding all the effects up, early age at first birth is associated with reduced earnings, but this is because it is associated with reduced schooling and increased family size.

The length of time since (most recent) birth is an important factor indirectly affecting earnings. The older at first birth, the younger the youngest child at the survey date, the fewer hours the mother will be working, and, as a result, the less she will earn. Thus Koo and Bilsborrow found that later childbearers, among whites, actually earned less, but this was because they worked less.

Spouse's or Other Family Income

Again, results are consistent. Age at first birth has no direct impact on other family income (Koo and Bilsborrow, 1979; Hofferth and Moore, 1979; Card, 1977; Haggstrom et al., 1981). Among males, at five years out of school adolescent fathers were earning more than comparable peers; 11 years out the difference had disappeared (Card, 1977). At that point, they were all out of school and in the labor force.

There are a number of indirect effects. An early first birth is associated with less schooling completed at age 27, which is associated with lower income of other family members at age 27 (Hofferth and Moore, 1979). An early first birth is associated with having a large number of children, which is associated with a lower income of other family members at age 27. Because of these two effects, an early first birth is associated with lower income of other family members at age 27, but the effect is indirect.

Family Income, Living Standards and Poverty

The effects of age at first birth on income and poverty are consistent with its effects on a female respondent's own earnings and other family income. There is no direct effect of age at first birth on family income, net of other factors (Koo and Bilsborrow, 1979; Hofferth

and Moore, 1979; Haggstrom et al., 1981). Nor is there a direct impact of age at first birth on whether or not the family is poor (Koo and Bilsborrow, 1979; Hofferth and Moore, 1979).

In contrast, early childbearers have higher living standards in midlife (age 35-44) because they have fewer "equivalent adult consumption units" (EACs) (i.e., fewer children in the home) than later childbearers (Koo and Bilsborrow, 1979). Although early childbearers had a greater number of children than later childbearers, they had them a longer time ago. Thus by the time the mother reaches age 35-44, most of the children of early childbearers have grown up and left home

In contrast, the children of later childbearers are younger and the majority still remain in the home. This points out the necessity of comparing young women who are at similar points in the life cycle to be able to make adequate comparisons of economic well being. Comparisons at a later point in the life cycle would be useful. (For a comparison of delayers with average age childbearers at a much later point in the life cycle see also Hofferth, 1984).

Indirect Effects of Early Childbearing

Even though there is no direct effect of an early first birth on family income or poverty status of young women, it is clear that there may be substantial indirect causal effects due to the impact of an early birth on schooling and on family size and composition. Level of schooling is a consistently important factor determining earnings. Family size is a consistently important factor affecting labor force participation by the mother and per person availability of income. Therefore both variables can be expected to affect family income and poverty status of a mother by affecting whether or not she is employed and how much she earns. And since both are affected by an early first birth, an early first birth will indirectly affect later family income and poverty. By tracing out these intervening paths we can better identify the kinds of impacts that an early first birth has, the magnitude of each of the effects, and the overall contribution of an early first birth to economic well-being.

There are two studies (Koo and Bilsborrow, 1979 and Hofferth and Moore, 1979) that have traced out a complex chain of effects from a first birth to later family income and poverty. These two papers form the basis of this part of the review. Other papers that have looked at part of the process will be referenced when appropriate. Two analyses were conducted in each study: one on all women; a second on only those women who had a first birth before they reached age 19.

Results for all Women

According to data for women of all races from the National Longitudinal Survey of Young Women, for each year a first birth is delayed, other family income at age 27 increases by almost $500 per year; the woman's own income increases by $200 (Hofferth and Moore, 1979). The effect is stronger for whites than for blacks. The effects are similar for whites in the NSFG. The effect of delaying a birth from 17 (or under) to age 18-19 is to raise family income by almost $700 (Koo and Bilsborrow, 1979).

As a result, for each year a young woman delays her first birth, her chances of being in a family below the poverty level is reduced by 2.2 percentage points among women of all races, a reduction over the total probability of being poor of 22 percent (Hofferth and Moore, 1979).

Both studies (Koo and Bilsborrow and Hofferth and Moore) found that, among women of all ages, the largest part of the indirect effect of an early birth on later economic well-being is due to the larger family sizes of early childbearers. Among women of all races, over half of the impact on own earnings and 80 percent of the impact on poverty status is due to differential family size in the Hofferth-Moore study. Twenty percent of the total impact on own earnings is due to the impact of an early birth on work experience and on hours worked last year. Only 6 percent of the total effect of an early first birth is through schooling. Of the effects on other family income, three quarters is due to the smaller families of delayers, one-quarter to greater schooling. Finally, of the total effect on poverty, 80 percent is due to smaller families of postponers, 12 percent to greater schooling, with 8 percent to differential labor force participation.

In the Koo-Bilsborrow study, among women of all ages, the largest portion of the indirect effect of an early birth is also due to the differential family sizes of early and later childbearers. One of the reasons is that a path through education was not specified for the total sample of women. But even when a path through schooling is specified, the effect through family size is as large as that through schooling.

It is certainly clear, therefore, that among women of all ages, the effect of a first birth through education on later earnings is very small, while that through family size is substantial.

Adolescent Childbearers

It is among the very earliest childbearers that we would expect the largest indirect effects of childbearing and the largest impact through schooling. The total effect of delaying a first birth for one year during the teen years on the earnings of the youngest childbearers is larger than that among women of all ages (Hofferth and Moore, 1979).

Seventy percent of the impact of early birth on own earnings of those whose first child is born at or before age 18 operates through reduced schooling. Another 30 percent operates through number of children. Koo and Bilsborrow also find a strong effect through schooling for white teenage childbearers, but not for black teen childbearers. About half of the total effect is due to reduced schooling.

Blacks versus Whites

In both studies the results are weaker for black than for white women. Age at first birth does not appear to be as important for the black woman as it is for the white woman. Among both black and white women the primary negative indirect impact of an early first birth on later economic well-being is through its impact on family size. An early first birth means more children by age 27 with its concomitant negative impact on labor force participation and earnings (Hofferth and Moore, 1979). However, among black women, early childbearers accumulate more work experience than later childbearers, increasing their earnings at age 27. Thus an early first birth is associated with somewhat higher well-being among blacks; among whites, early childbearing predicts substantially lower income. An early first birth has no impact directly or indirectly on the incomes of other family members and very little on the probability of being poor among blacks, whereas there is a substantial negative impact of an early first birth among whites both on other family incomes and on the probability of being poor at age 27.

Welfare Receipt

Early childbearers are more likely to be in households receiving AFDC, but the relationship is mostly indirect. Once other factors such as socioeconomic background, education, age at first marriage and timing of first birth are controlled, the relationship disappears (Moore et al., 1978). A premarital first birth is associated with welfare receipt, particularly among young female heads. A premarital birth increases the probability of going on welfare for those not enrolled and reduces the probability that those already enrolled will exit welfare (Moore at al., 1978).

Another way to look at the problem is to ask whether early childbearers are disproportionately represented among welfare recipients. It appears that they are. Moore (1978) aproached this question by asking what proportion of AFDC and non-AFDC households contain mothers who began childbearing as teenagers? She (and other researchers) found that in the mid 1970s between 60 and 80 percent of mothers under 30 in AFDC households were teen mothers, compared to only 35 percent of mothers in non-AFDC households (Moore, 1978; Moore and Burt, 1982; Block and Dubin, 1981; Scheirer, 1983).

There appears to be an association between early childbearing and welfare receipt. However, this effect is mostly indirect: an early pregnancy may precipitate a premature and instable marriage. An early and premarital birth creates a family form with a high probability of needing public assistance. The low educational levels and large family sizes of teen childbearers increase their probability of depending on public assistance later on.

Factors Leading to Successful Early Childbearers

A recent study (Furstenberg and Brooks-Gunn, 1985) has explored the factors associated with variation in outcomes among early childbearers. The researchers followed up a sample of 300 women in Baltimore who had their first child at age 18 or younger one, three, five and seventeen years after that first birth. The purpose of the study was to see what factors and conditions affected the adaptation of the early childbearers and their eventual economic well-being. The outcomes, measured 17 years after first birth, were 1) whether receiving welfare in 1984, and 2) whether economically secure, that is whether family income totalled $25,000 per year or more in 1984. The factors associated with whether a family was economically secure in 1984 were almost identical to those associated with whether a family was receiving welfare, though the direction of effects was the reverse.

Three family resource factors were associated with later economic well-being: high parental education, small parental family size and welfare experience as a child. Those whose parents had high levels of schooling were twice as likely to be secure as adults, and 4 times less likely to be on welfare. Those who came from smaller families were more likely to be secure and less likely to be on welfare because they were less likely to have a second child soon after the first. Finally, those from welfare families were more likely to receive welfare themselves soon after a birth, and as a result, were more likely to receive it and less likely to be economically secure as adults. These are factors over which the individual has relatively little control.

Characteristics of the individual during the high school years and over which some control can be exercised include school performance, school continuation, type of school attended and educational aspirations. Those who had high aspirations were more likely to to attend the special school for pregnant girls and to remain in school, both of which were associated with a lower likelihood of being on welfare and a greater chance of being economically secure later on. Being at grade level was also associated with a greater chance of being economically secure as an adult.

The factor over which individuals have substantial control is their use of birth control. The researchers found that those who used birth control had fewer additional children soon after the first, and were more secure and less likely to be on welfare later on as a result.

Planned interventions were also important. Girls who attended either the special school for pregnant girls or attended the hospital prenatal program were more likely to contracept than those who didn't (Furstenberg and Brooks-Gunn, 1985).

What career contingencies, factors impinging during the young adult years, affect later well-being among teen mothers? Those who married and who remained married were less likely to receive welfare and more likely to be economically secure 17 years after the first birth. Marriage is a key to economic success, but only when the marriage lasts. Unfortunately, the chances of having a stable marriage were very low in this sample.

> Early marriage was usually a losing bet. Women who married early were especially prone to economic dependency when their marriages did not work out because they frequently had cut short their educational careers to enter matrimony. Women who married later, especially if they did not wed the child's father, were also in a precarious situation for these relationships were particularly prone to dissolution. Women who delayed marriage indefinitely to continue their education usually avoided economic dependency but they rarely could achieve economic security on the strength of their own earning power (Furstenberg and Brooks-Gunn, 1985:92).

Work experience appears to have little impact on economic success. In fact, early work experience may be harmful, particularly if it prevents school completion (Furstenberg and Brooks-Gunn, 1985). Residential experience has a small impact on economic success. Women who remained in the parental household for three or more years were less likely to be economically secure at the 17 year follow-up, although the effect is small. Thus, although some parental support and help is important after a first birth, lengthy coresidence does not enhance economic independence.

The most important factors in later economic success or failure were family resources, aspirations, marital success and control of fertility. Clearly early childbearers who are ambitious, who continue in school, who use birth control and who avoid a rapid subsequent birth are better able to control their long run family size. The earlier results show that this is one of the most important ways that early childbearers can increase their prospects for economic security and independence as adults.

SOCIETAL COSTS

Early childbearing has an impact on society, for when individuals cannot realize their full educational and occupational potential, society loses their economic contributions. In addition, if early childbearers utilize public services more than other women, public expenditures on programs such as AID to Families with Dependent Children (AFDC), Medicaid, and food stamps increase.

The previous section has shown that AFDC mothers are more likely to have been teen mothers than are American women in general. Three studies have attempted to estimate the cost of teen childbearing in terms of the public expenditures on women who were teens when they had a first birth. This total does not necessarily represent the amount that could be saved if all these mothers had postponed their first birth, since some would have required public assistance regardless of their age at first birth.

Moore (1978) and Wertheimer and Moore (1982) analyzed three data sets to estimate 1975 welfare expenditures on teen mothers. The results show that about half of the AFDC budget goes to households in which the mother was a teenager at first birth, about $4.65 to $5 billion in expenditures just through AFDC (Moore and Burt, 1982:Table 8). Adding food stamp benefits plus medicaid benefits to mothers and children increases the total to $8.55 billion in 1975 (Moore and Burt, 1982:Table 9).

Scheirer (1982) estimated AFDC payments to current and prior teen mothers under age 30 (using the 1975 and 1977 AFDC surveys) to total $2.5 billion in 1975 and $3 billion in 1977. Moore's estimate of payments to households of women age 14-30 and who gave birth before age 20 was $2.4 billion in 1975. The estimates based on a number of different data sets are very similar.

Block and Dubin estimated AFDC costs for teen childbearers in Monroe County, New York in 1977 and 1978. They found the average cost per case to be $4,262 and $3,494 in 1978 for teen and non-teen childbearers respectively under 30 in that year. Scheirer also found that households of teen mothers received larger grants; however, this was because of the larger number of children of teen childbearers than older mothers. Once other factors were controlled the direct effect disappeared. Block and Dubin showed that over time older childbearers do catch up somewhat; however, substantial differences in family size remain. Scheirer also showed that the length of time on welfare is a function of age at first birth. Early childbearers spend slightly more time on AFDC. Thus the higher welfare cost of early childbearers is due to three factors: the higher proportion of early childbearers who are recipients, the higher cost per case, and the longer duration of payment (Scheirer, 1982:3).

Finally, in a recent study (see this volume, Chapter 10, using a similar mehtodology to that of Moore (1978) Burt estimated total AFDC costs in 1985, due to teenage mothers, to total 16.6 billion dollars, double the 1975 Moore estimate.

THE HYPOTHETICAL IMPACT OF POLICY INTERVENTIONS

Further analyses addressed the relative impact on public sector costs of reducing births as opposed to mediating the effects of an

early birth (Moore and Wertheimer, 1984:Tables 1,2; Wertheimer and Moore, 1982:Table 37). Three scenarios which reduced first births to teens and three which would mediate the effects of an early birth were compared to a baseline scenario in which present trends were continued. The results show dollar savings for all approaches, but a much greater savings when a first birth is averted. The greatest savings occur when the fertility of all teenagers is reduced by 50 percent--the number of women age 20-29 receiving AFDC payments in 1990 would be reduced by 35 percent, compared with the baseline scenario; public sector costs for AFDC, Medicaid and Food Stamps for families of women 20-29 would be reduced by an estimated $1.4 billion.

Eliminating births to unmarried women under 18 reduces the number of women 20-29 receiving AFDC by 17 percent and reduces public sector costs for them by $.9 billion. Reducing the fertility of teens under age 18 by 50 percent reduces the number receiving AFDC by 14 percent and reduces public sector costs by $ 72 billion. Reducing the subsequent childbearing of young teen childbearers reduces by 11 percent the number receiving AFDC, and reduces public sector costs by $1 billion. The reduction in the number receiving AFDC due to reducing school drop-out of teen childbearers and to increasing their marriage probabilities are two and 11 percent, respectively. These represent declines in expenditures of $.22 billion and $.77 billion. Thus the results support the common sense notion that prevention is preferable to remedial cures. Of the ameliorative strategies, reducing subsequent fertility is the most effective, and the one that appears to become even more significant over time. The scenario with the least impact is reducing school drop-out. Although initially surprising, this result seems to arise from the relatively low economic return to education for women such that even well-educated women earn relatively little. Marriage appears to improve the short-term economic status of young women more than additional schooling.

Contrary to initial expectations, none of the scenarios has a significant impact upon labor force participation, hours worked, earnings or taxes. There are several possible reasons for the lack of effect. Moore and Wertheimer (1984; Wertheimer and Moore, 1982) cite as reasons the lack of strong relationship between education and occupational attainment for this group of young women. This argument is supported by data from McLaughlin, 1977, who finds that early childbearers are less able than later childbearers to translate additional schooling into greater work experience and higher earnings potential. Furstenberg and Brooks-Gunn (1985) also failed to find a strong relationship among early childbearers between schooling and later economic security as adults. However, an alternative explanation is the differential life cycle stage hypothesis referred to earlier. The women in the Wertheimer-Moore study are still relatively young--ages 20 to 29 in 1990, the endpoint of the computer simulation. Since this is the period of childbearing for most women, delayers would be beginning families at the time that the early childbearers would be moving back into the work force. This would tend to minimize differences between early and later childbearers.

It is important to note that differential patterns of childbearing do have a very strong impact on public sector costs even at ages 20 to 29. The research cited above strongly suppports the previous conclusion that early childbearing does have substantial long term economic costs for both the individual and for society, and that rapid subsequent childbearing and large family sizes among early childbearers are a major reason for the greater disadvantages of early childbearers and the large cost to the public. These serious consequences underscore the benefits of policies which delay the first birth and prevent or delay subsequent births to teenagers.

Scheirer et al. (1982) found that the indirect effects of a one-year increase in mother's age at first birth, aggregated across the total population in 1975 of AFDC families with a mother under age 30, generated expected costs savings of $12.5 million per month or approximately $150 million per year (without including any savings generated by any reduction in the number of recipients.)

SUMMARY AND CONCLUSIONS

This review has included only those studies that controlled for several important prior differences between early and later childbearers, of which socioeconomic status background is the most important. Several studies were able to control for aptitude as well--the Card study, for example. All the studies cited are consistent in at least one regard. All find an additional negative impact of early childbearing on later economic well-being after adjusting for background and other prior differences.

The studies reviewed here are especially important because they reveal the process whereby an early birth affects later economic well-being. First, most of the impacts on later economic well-being are indirect. That is to say, an early birth reduces schooling and increases later family size. It is these variables that reduce later labor force participation, earnings and family income, not the early birth per se. This implies that if the links between an early birth and schooling or family size could be broken, so would the link between an early birth and economic disadvantage. This is the optimistic part. It has proved difficult, in fact, to break these links. More research on the factors associated with lessening these connections is needed.

Second, the factors that disadvantage early childbearers relative to later childbearers in economic well-being are the same factors that discriminate the more from the less successful early childbearers. One difference is that for certain types of adolescent programs eligibility depends on childbearing status.

These studies have also pointed out important race and ethnic differences. Because so little is known about Hispanics, this chapter

focuses on black-white differences. The important difference is that blacks are not affected as negatively by an early rather than later first birth as are whites. There are several possible hypotheses as to why this is so. First, early childbearing is common in the black community; therefore, institutions and mechanisms have developed to help young women cope. A second hypothesis is that opportunities have not developed enough in the black community so that the differences among young women with high and low opportunities are not as great. Another hypothesis might be that blacks start earlier, but that they terminate childbearing earlier; thus they can devote themselves to employment in their early twenties, when later childbearers are just beginning. Another hypothesis is that the reservation wage for blacks is so much lower than whites that they do not have the luxury of remaining out of the work force as do whites.

Although most of the research conducted to date has analyzed the impact of an early first birth on the young mother, the evidence presented suggests important impacts on the father as well. More research needs to be conducted to better describe the impact of early fatherhood on young men. Improved data are just now becoming available (see, for example, Marsiglio, 1986) and should increase researchers' ability to determine the consequences of early childbearing for males.

A final point is that all the studies mentioned here are based on data collected in the 1960's and early 1970's. Birth years of the respondents date from the late 1920's to the early 1950's. Their high school experience predates the implementation of Title IX in 1975, prohibiting discrimination against pregnant or parenting teenagers in publicly funded school programs. Thus we don't know what changes have occurred between these studies and current students. There are now enough years of longitudinal data available from several recent national data resources to replicate some of these studies of long term consequences of teenage childbearing and see what changes have occurred. Of course, as adolescents charge, the rest of society has also been changing. On the one hand, today family size remains low and education high. Relative to the majority of adults, not completing high school and having more than two children probably represents an even greater disadvantage than it might have been even one decade ago. On the other hand, several studies show that a small amount of additional schooling would decrease early childbearers' dependence on public assistance and increase their economic security as adults only slightly relative to the large impact of a change in childbearing patterns. Thus one conclusion is that although increasing school completion is an important objective, the relationship between schooling and women's earning power is still too weak for the latter alone to raise living standards. Even today women's long term economic security is heavily dependent on marital success and fertility control.

CHAPTER 7

TEENAGE FATHERHOOD

Ross D. Parke and Brian Neville

INTRODUCTION

The adolescent male has been ignored in previous reviews and discussions of adolescent pregnancy since teenage pregnancy and childbearing has traditionally been viewed as a female issue. This state of affairs is part of a larger phenomenon, namely the relative prior neglect of males in pregnancy, birth, and childrearing in general, among all age groups. The thesis of this chapter is that a full understanding of the implications and consequences of teenage pregnancy and childbearing requires knowledge of the role of the male. To achieve this aim, we will examine the male partners of teenage mothers in their role as parents and explore the determinants of assuming this role, and the consequences for the male, his partner and offspring.

Reasons for Our Earlier Neglect of Adolescent Males

Many of the reasons for our prior neglect of adolescent fathers have derived from our general lack of concern with the male role in infancy and childhood. A variety of factors contributed to this situation--theoretical models of infant development that have placed a primary emphasis on the mother-infant relationship, unfounded notions about the "biological preparedness" of mothers in contrast to fathers, and adherence to traditional models of father involvement and sex role allocation, even in the face of considerable secular change (Parke and Tinsley, 1984). Social-structural and social prejudicial factors specific to adolescent fathers also contribute to this neglect. Adolescent fathers are often unmarried during the time of conception and birth, and are generally excluded from participating in the birth and early care of their infants. This is generally the result of the powerful social prejudice that surrounds pregnancy and child birth among unmarried teenagers (Sawin and Parke, 1976).

Methodological Problems in the Area

Before launching our discussion of the research in this area, it is important to note that there are a set of general problems of method, sampling, and design which plague many of the investigations in this area.

(1) Sampling: A majority of the studies of males use volunteer samples which create serious interpretative problems due to subject self-selection. Many of the samples are drawn from clinics or other types of social agencies. Samples often tend to be too small to permit adequate statistical analysis. Breakdowns are not often given about the distribution of the subjects ages across the full spectrum of adolescence. Definitions of the adolescent age period varies across studies with some using age 21 as an upper limit and others using age 19. In some cases, older (nonadolescent) males are included if their female partner is an adolescent. Comparisons among studies are further complicated by the fact that race, marital status, and socioeconomic status vary across studies.

(2) Design: Many of the studies in this literature fail to include control groups of adolescents who are not fathers. Nor do many studies include groups of nonadolescent fathers. The majority of studies are cross- sectional, with few longitudinal studies represented in the area.

(3) Method: With few exceptions, the studies rely solely on questionnaires administered to fathers, sexually active males, or in some cases to only their female partners. Many of the questionnaires have unknown or poor psychometric properties. To date, little work based on observations of fathers with either the mother and/or infant had been executed.

RESEARCH ISSUES IN UNDERSTANDING ADOLESCENT FATHERHOOD

Although in the vast majority of cases fatherhood during adolescence is unplanned and unexpected, many young men achieve fatherhood status during the adolescent years. It is our assumption that the adolescent male in his role as father has an impact on himself, his partner, and his offspring. Moreover, the determinants of sexual activity and contraceptive use which were reviewed in the other chapters may provide little insight into another phase of the problem, namely, adolescent fatherhood. Although the research is limited and flawed, it is important to review these issues in order to give better guidance to prevention and intervention policy and programs.

In Search of Personality Profiles of Adolescent Fathers

A long-standing theoretical tradition within the social sciences is to explain behavioral outcomes in terms of psychosocial characteristics of individuals. This search is in contrast to a perspective which emphasizes situational or environmental restraints and processes as explanatory modes. Many of the stereotypes of adolescent fathers have arisen, in part, due to our penchant for personalogical explanations. Adolescent fathers have variously been viewed as unscrupulous, irresponsible, and uncontrolled who have little control over their lives.

Since research has begun to catch up with the rhetoric, little support has been found for a separate, distinctive profile of adolescent fathers. A number of studies have assessed the personality characteristics of adolescent fathers in comparison to non-adolescent fathers. These studies, in general, suggest that there is a great deal of overlap in the personality profiles of adolescent fathers and non-fathers. Some studies have focused on single variables while others have relied on a multivariate strategy.

Single Variable Studies

The most heavily researched personality factor which has been hypothesized to distinguish adolescent fathers from non-fathers is locus of control. This variable measures the degree to which an individual believes that events in his life are causally related to his own behavior. Internal locus of control refers to the belief that the individual has control over the events and outcome in his life. On the other hand, an individual who believes that the events in his life are determined by an external source (fate, luck, chance, or powerful others) is considered as having an external locus of control. It has been hypothesized that teenage fathers (and mothers) are higher in external locuses of control, which, in turn, may account for their lower use of contraception and for their inability to control their sexual desires and activities. There is no support for this hypothesis for adolescent mothers; studies of adolescent mothers have found no differences in locus of control between adolescent mothers and females who are not mothers. Results for males are inconsistent. In one study of 48 unmarried black adolescent fathers and 50 non-father adolescent controls, the fathers were higher in external control than the control adolescents (Hendricks and Fullilove, 1983). In contrast, in another study (Robinson, Barret, and Skeen, 1983) of 20 unwed adolescent fathers and 20 non-fathers, the investigators found no differences in locus of control. Similarly, Williams-McCoy and Tyler (1985) found no differences in locus of control for a sample of 24 teenage fathers and 27 non-fathers. In light of the fact that both of the studies which reported no differences utilized well standardized instruments, while the Hendricks study relied on two single questions to measure externality, it is likely that locus of control is not a robust correlate of teenage fatherhood.

Multivariate Studies

Since it is unlikely that a single factor alone is likely to discriminate between fathers and non-fathers, perhaps multivariate studies would yield clearer patterns. In an early study, Paulker (1971) compared the MMPI profiles of boys who became fathers during adolescence with a matched control group of boys who did not. Since the testing was executed prior to their identification as fathers, the impact of being labeled as an adolescent father was eliminated. There were differences with the out-of-wedlock fathers scoring higher on scales which suggest higher activity and somewhat less control. However, the overlap between the test scores was extensive and only three of thirteen scales were significant. Similarly, there were no differences on the test of intellectual functioning. As Paulker (1971) concludes "any contribution these characteristics might make to out-of-wedlock pregnancy would seem to be minimal". Fifteen years later, this conclusion still seems to have considerable validity. Williams-McCoy and Tyler (1985), in a recent study of black adolescent males (24 fathers and 27 non-fathers) assessed a variety of personality and background characteristics including locus of control, trust, coping styles, as well as whether the subject was born out-of-wedlock and the presence of a sister or brother who had an out-of-wedlock child. Only one personality factor discriminated fathers and non-fathers: interpersonal trust. Fathers were less trusting than non-fathers. Again, personality factors seem to play a relatively minor role in determining whether or not an adolescent male becomes a father.

Others confirm the general lack of differences in personality characteristics of adolescent fathers and non-fathers. In a study of 100 teenage fathers and 100 non-father, age-matched peers ranging from 14 to 19 years old, no differences were found in the psychological profiles of the two groups (Rivara, Sweeney, and Henderson, 1985) as assessed by the Offer Self-Image Questionnaire, a measure of personality adjustment which yields several subscales: impulse control, sexual attitudes, family attitudes, and mastery of the external world.

Instead, the background of the boys--namely, whether or not their own mother was a teenage parent--was the principal discriminating factor in these two recent studies. Whether this effect is mediated by parenting modeling, differences in the permissiveness of attitudes toward sexual activity the greater acceptance of teenage childbearing or some further factor is not clear.

Part of the difficulty of isolating personality profiles may be the individual vs. dyadic focus of the research. As Elster and Panzarine (1981) note: "a certain interaction of sociocultural and psychological factors between adolescent partners is necessary for unprotected intercourse to occur. Each partner brings into the relationship their own set of sexual values and psychological traits. If <u>both</u> adolescents have a constellation of factors which places them at high risk for pregnancy, then there is a greater likelihood that this will occur than

if only one or neither of the sexual partners has this pattern" (1981: 45). Possibly, studies which assess both partners may yield more meaningful patterns. In summary, there is no firm basis for concluding that there are differences in personality of teenage males who do and do not become fathers. The search for the predictors of which male adolescents will father a child clearly should be directed elsewhere.

THE ADOLESCENT MALE AS PARENT

In order to assess the role that an adolescent plays as a parent, a number of issues will be examined including (a) their knowledge, (b) their interest in infants, and (c) their competence to perform caregiving tasks.

It is our assumption that a multivariate framework is necessary in order to understand the dynamics of the adolescent father as parent. Second, it is assumed that a developmental perspective is necessary. Third, a life course perspective is useful since this view alerts us to the competing demands and needs of the male during the adolescent period. Fourth, it should be emphasized that the determinants of adolescent sexual activity and the determinants of adolescent parenting may be independent. Fifth, assessment of the parenting role requires recognition of direct and indirect effects. Fathers can impact their offspring through direct interaction as well as indirectly through the support that he provides the child's mother.

Developmental Restraints or Limitations

There are a variety of social, emotional, and cognitive limitations which may curtail the adolescent's ability to parent.

Identity Formation. During adolescence, one of the major developmental tasks is the task of identity formation (Erikson, 1965). While the process is multifaceted, complex, and gradual, this process is not often fully accomplished until late adolescence or even the early 20s (Satrock, 1985; Waterman and Goldman, 1976). Moreover, evidence suggests that there is a relationship between the capacity for intimate interpersonal relationships and the achievement of a stable identity (Orlofsky, Marcia, and Lesser, 1973; Kacerguis and Adams, 1981). This potentially limited capacity for intimacy may curtail the adolescent's ability to parent. Moreover, adolescence involves exploration and experimentation with a variety of roles, such as student, peer group member, or athlete which, in turn, may be incompatible with the parental role (Sadler and Catrone, 1983).

Cognitive Development. During adolescence, the individual's cognitive capacities undergo a set of changes. At approximately age 12, the child moves, to use Piaget's description, from concrete to formal operations. In contrast to the younger child, the adolescent is more

capable of hypothetical-deductive thinking. "The process of deduction is no longer confined to perceived realities, but extends to hypothetical statements" (Conger and Petersen, 1984).

In this stage, he is capable of thinking abstractly about events and is able to see all possible relationships that may exist in a problem. In addition to improved problem solving skills, the future time perspective of adolescents is greater than that of younger children. Finally, they have a greater "sense of the game" (Flavell, 1985), namely that problems have solutions and an awareness of strategies for solving problems.

However, in the present context, it needs to be emphasized that there are very large individual differences in how quickly these transitions take place. Second, the process is a gradual one which continues across adolescence into adulthood (Keating, 1980). Third, adolescents or even adults often fail to employ formal operational thinking nor do they apply their highest levels of thinking to all problem areas. Emotional factors may especially interfere with the effective utilization of these capabilities. In the present context, it is likely that among adolescents, there will be great differences in their cognitive abilities to manage the planning and problem solving associated with effective parenting.

Family Relationships

One of the main tasks of adolescence is the gradual development of independence and emancipation from the family. The early onset of fatherhood conflicts with this movement, particularly if the male is still financially and perhaps emotionally dependent on his family. This may prolong the period of dependence which, in burn, could lead to intergenerational conflict.

Although many researchers have found conflict between mother and adolescent daughter over decisions about child care and childrearing (Sadler and Catrone, 1983), conflict between adolescent fathers and their parents is likely, especially if the new family lives with the paternal grandparents (Bolton and Belsky, 1986). Moreover, early parenthood implies early onset of grandparenthood at a time when the parents may be unwilling to accept this new role (Tinsley and Parke, 1984). On the other hand, early fatherhood may result in premature emancipation prior to the time when the adolescent male was prepared to sever family ties. Being emotionally dependent on his own parents, he may be unprepared to accept the responsibilities of fatherhood. Nor are these issues separate. In a longitudinal study of college freshmen' the attainment of a stable identity, for example, is related to a higher degree of family independence (Waterman and Waterman, 1971). Similarly, LaVoie (1976) found that male adolescents high in identity reported less parental regulation and control. Early fatherhood may inadvertently lead to heightened family dependence, which in turn, could interfere with the progress of identity formation.

Peer Relationships

At the same time that dependence and involvement in the family is decreasing, involvement in the peer group is increasing (Hartup, 1983; Gottman and Parker, 1986). Early onset of parenthood is incompatible with this heightened participation in peer activities and the necessity of curtailing or even ceasing this participation is another obstacle to acceptance of parental responsibility.

Educational and Occupational Limitations

There are educational and occupational barriers which limit the adolescent male's capacity to assume parental responsibility. On the educational side, there is conflict between the pressure to continue formal schooling and the pressure to provide financial assistance for his partner and child. Education is less often interrupted in order to assume parental responsibilities in the case of male than female adolescents. Two factors may account for this sex difference. First, societal demands to assume the central caregiver role are stronger for females than males (Bernard, 1981), while greater support and value is placed by parents on educational achievement for males than females. (Dweck and Elliot, 1983 Hoffman, 1977).

Even if education is discontinued and employment is sought, serious problems still remain. In fact, a number of researchers have argued that a major impediment to male involvement in the fatherhood role stems, in part, from the centrality of the breadwinner concept in our definition of adequate fathering (Bernard, 1981; Pleck, 1983; Teti and Lamb, 1986) as well as our definition of masculinity (Yankelovich, 1974). Adolescent males may be reluctant to assume the fatherhood role due to their either perceived or actual inability to adequately support a family. Recent studies of adolescent employment (Lewis-Epstein, 1981; Steinberg, 1984) indicate that the jobs available are generally at unskilled labor, at minimum wage levels with little possibility of advancement. Not only is the assumption of this type of employment potentially emasculating and inconsistent with a young adolescent male's emerging sex role concept but it also provides an inadequate basis for assuming familY responsibilities. This economic outlook for adolescent males may be a further factor which limits their acceptance of/or involvement in the fatherhood role.

Stresses of Adolescent Fathers

As a result of the early onset of fatherhood, the adolescent male may encounter a variety of stressors which may, in turn, alter his ability to cope with the social, emotional, cognitive, and practical aspects of his life. These stressors may, in turn, affect the male adolescent's capacity to parent. A number of factors will affect the adaptation to stressful change, including the type and of stress, as

well as the availability and adequacy of both personal resources and external social support systems (Parke and Tinsley, 1982; Elster and Panzarine, 1981; Elster and Hendricks, 1985).

Some recent studies have addressed the types of stressors which adolescent fathers encounter. In the first of two investigations, Elster and Panzarine (1980) interviewed 16 unwed white teenage fathers (mean age 17.4 years) enrolled in an adolescent maternity project. Nine teenagers were clinically assessed to be coping well, four to be coping moderately well, and three to be coping poorly. Six were referred for counseling because they were clinically depressed. There was a positive relationship between a measure of overall personality adjustment and the adequacy of their coping. In a later study, Elster and Panzarine (1983) interviewed 20 adolescents (mean age 17.6 years) from one to four times during the prenatal period and at four to six weeks following delivery. All conceptions occurred premaritally, but most couples had married by the time of delivery. Stressors were grouped into four categories. First, the teenage fathers expressed vocational-educational concerns, which consisted primarily of general worries regarding how they were going to support their new family, finishing school, or finding employment. These concerns were highest during the first trimester and appeared to remain at a relatively high level through gestation and into the postpartum period. All subjects expressed this concern. A second set of stressors focused on health. This included the present health of the mother, immediate health, and future welfare of the child and labor and delivery concerns. Due to the possible sampling bias in these studies, the generality of the findings is unclear.

Health concerns were shared by 94 percent of the sample, but peaked during the third trimester and dropped off after delivery. A third source of stress was relationships with partners' parents, friends, and their feeling of alienation from their church. Seventy-six percent of the sample expressed these concerns but this source of stress was greatest during the first trimester and appeared to decrease across time. Surprisingly, only 35 percent of the males were concerned about parenting. This concern was also shifted across time. It appeared during the second trimester, dropped slightly in the latter part of pregnancy, and increased again postpartum.

Other studies suggest that these concerns are not restricted to white adolescents. Hendricks, Howard, and Caesar (1981), in a study of 95 black teenage fathers found that 55 percent of the males expressed concerns about interpersonal relationships, which included a wide range of problems (relationships with their family of origin, restriction of freedom, problems with parents of their partner, difficulties of seeing their child). Others (23 percent) reported problems related to external factors, such as lack of employment, limited money, and lack of education opportunities. Fourteen percent reported no problems.

In a later study (Hendricks, 1984), young Hispanic fathers reported a similar range of stresses including occupational, financial tensions, school problems, interpersonal problems with both their relatives and their partners, concern about their children's health and future. Together, the data suggest a common set of stressors across different ethnic groups of teenage fathers.

Although this work must be viewed with caution due to the unrepresentative nature of the samples and the lack of comparison groups of older fathers, the studies do underscore the fact that fatherhood elicits a variety of stress-producing concerns for adolescent males. Moreover, other studies (McNall, 1976; Miller and Myer-Walls, 1983) suggest that older parents experience many of the same concerns. However, it is likely that the stresses are exaggerated for adolescents due to their more limited psychological and financial capacities. The implications of these issues for intervention will be explored later in this chapter.

It is clear that there are serious conflicts between the tasks and goals of males during the adolescence period and the requirements for effective parenting. Next, we turn to an evaluation of the male adolescent's level of involvement with their infants, knowledge of infant development, their interest in infants, and their competence in executing the parental role.

The Level of Involvement of Adolescent Fathers

A common misconception among researchers and health care professionals alike is that adolescent fathers have little contact with their offspring. There are two parts to this myth. Many believe that: (1) the majority of teenage births occur out-of-wedlock, and (2) unmarried fathers have little contact with the mother of the child after the birth. The data contrast markedly with these notions. First, although slightly more than half (54 percent) of all births to teenagers are conceived out-of-wedlock, only about 35 percent of all births to teenagers occurred out-of-wedlock (Alan Guttmacher Institute, 1976). However, between the early 1960s and early 1970s, the proportion of children born to unwed adolescent mothers has doubled (Alan Guttmacher Institute, 1976).

McCarthy and Menken (1979) in an analysis based on the 1973 National Survey of Family Growth found that of 2,258 adolescents who conceived out-of-wedlook, 68 percent had married by the time of delivery. Similarly, Zelnik, Kantner and Ford (1981) in their national survey of unmarried adolescents found that 64.8 percent of the white females in the 1971 cohort and 61.8 percent of the whites in the 1976 survey married while pregnant. There are marked race differences, since only 9 percent and 10.4 percent of the black respondents in the 1971 and 1976 cohorts, respectively, married during a first pregnancy. These figures are consistent with other reports: according to the

National Center for Health Statistics, 39 percent of white and 90 percent of black teenage births in 1982 were out-of-wedlock.

According to Lerman (1985) 65 percent of all 18-25-year-old males who were fathers in 1983 had married after the birth of their first child. The decision to marry has important implications, since the probability of being an absent father is lower if marriage occurred before rather than after the birth of the first child. Eighty-three percent of non-absent fathers had married before the child's birth.

Second, several studies of unmarried adolescent fathers show a surprising amount of paternal involvement for extended periods following the birth. For example, in a study of 138 unmarried adolescent mothers in Minnesota, Nettleton and Cline (1975) found that 50 percent of the 45 mothers who did not relinquish custody of their infants dated the father during the infant's first year of life. Moreover, 20 percent of these 45 eventually married him. Similarly, 46 percent of the 180 unwed mothers Lorenzi and his colleagues (Lorenzi, Klerman, and Jekel, 1977) interviewed in New Haven had either married the child's father or were seeing him on a regular basis 26 months after the birth. Although the number of women who have regular contact with the men who fathered their children declined over the child's first two years (56 percent at 3 months, 40 percent at 15 months, and 23 percent at 26 months), the percentage of marriages to the father increased over this same period (7 percent by 3 months, 17 percent by 15 months, and 23 percent by 26 months). A small but constant proportion of the mothers at each time point (18 percent) reported that they saw the father only occasionally. In addition, most of the fathers who visited the mothers also visited the child. In addition, Furstenberg (1976) noted similar rates of visitation as late as five years after the birth. Twenty-one percent of the fathers were living with their children, another 20 percent visited their offspring on a regular basis, while 21 percent visited occasionally.

The most comprehensive report of the extent to which young fathers live with their children comes from a recent study by Lerman (1985). This investigator used NLS data to examine these issues on a national sample from 1979 to 1983 of young men who were 14-21 in 1979. In 1979, 40 percent of young fathers aged 14-21 were absent or lived away from at least one of their children. Across the period of 1979 to 1983, as the sample aged, absent fathers as a proportion of all fathers declined from 40 to 33 percent.

Finally there are complex arrangements that often obscure thelevel of involvement of young fathers. Lerman (1985) found that 5 percent of absent fathers 18-21 years of age and nearly 20 percent of the 22-25-year-olds--often the partners of adolescent mothers--lived with some but not all of their children. Failure to recognie the multiple sets of living arrangements may have underestimated the level of involvement of young fathers.

There are large racial differences in the level and pattern of absent fatherhood among young men. In light of the high proportion of unmarried young black mothers, it is expected that there will be a high percentage of young black men who are absent fathers. Among 22-year-olds, over one of four young black men had become absent fathers; in contrast to only 3 percent of white and 9 percent of Hispanic 22-year-olds were absent fathers (Lerman, 1985). Age of onset of fatherhood is an important correlate of becoming an absent father (Lerman, 1985). Of black men ages 23-25 in 1983, about one third of absent fathers had their first child at age 18 or under. In contrast, only 13 percent of black fathers with their children had a first child by age 19. A similar picture was evident for whites. Among 23-25-year-old white males, 16 percent of the absent fathers vs. 7 percent of non-absent fathers had their first child before age 19. However, only about 10 percent of 23-25-year-old absent fathers had their first child by age 16, which suggests that very young onset of fatherhood is unusual. In contrast, age of onset of sexual activity is another correlate of absent fatherhood. Absent fathers initiated sexual activity earlier than average. Sixty-three percent of absent fathers (22-25-year-olds) were sexually active before age 16 in congrast to 25 percent of child less men and 32 percent of fathers living with their children.

The rates of contact between fathers and children vary as a function of whether or not the non-residential father had previously been married to the child's mother (Furstenberg and Talvitie, 1980). In the ease of the formerly married fathers, only 41 percent had no contact over the past year, while 30 percent had at least one contact during the prior year. In the case of the never married fathers, half had visited their children on at least one occasion during the past year and about a fourth maintained regular contact with their offspring, visiting at least once a week. An interesting and consistent pattern in these studies is that a significant number of fathers establish a "stable" live-in relationship with their child only after having been residentially separated from their child for one or two years (Furstenberg, 1976; Lorenzi et al., 1977)--a period that is often necessary to complete formal education and/or secure regular employment. As will be discussed later, a delay in regular father-child contact does not necessarily preclude the development of a satisfactory father-child relationship or diminish the father's impact on his child's later development.

Family background factors are associated with the extent to which males will become absent fathers as opposed to fathers who live with their children. According to Lerman (1985), young men who became absent fathers were more likely than other young men to come from families on welfare. Nearly 27 percent of absent fathers lived in families who received welfare, in contrast to only 8-9 percent of other yount men. Similarly, income levels of families of males who became absent fathers were lower. While these figures suggest that economic disadvantage is a correlate of fathering involvement, the relationship is much stronger for white and Hispanic populations than for black males.

In presenting these data, it is important to stress that we are not suggesting that all, or even the majority, of relationships between unmarried adolescent parents are supportive, mutually satisfying, and stable. In fact, there is considerable data to the contrary. It is well established that divorce rates among teenage parents are much higher than in the general population (Furstenberg, 1976; Lorenzi et al., 1977; Sauber, 1970). Furthermore, teenage mothers often have unrealistic expectations about the father's marriage plans. In the Lorenzi study, of the 47 percent of the mothers who expected to marry the father, only 36 percent had married him by the baby's second birthday. However, such figures have been overemphasized in the literature and may in part be responsible for the predominantly negative view of the adolescent father that has characterized the literature.

Moreover, in some cases of both adolescent as well as older fathers, mothers function as a gatekeeper and limit the degree of father involvement in infant and child care (Parke and Tinsley, 1984; Parke and Beitel, 1986). Especially among adolescent fathers, the partner's parents may limit the degree of contact that the father is permitted to have with either his child and/or the mother.

Knowledge of Development

Adolescent parents may be less well prepared for parenting than older parents, as assessed by their knowledge of norms for infant development. In one study of teenage couples, de Lissovoy (1973) assessed both maternal and paternal knowledge of motor, language, and social developmental norms and found that both parents, but particularly fathers, were not familiar with developmental norms. Teenage parents expected such accomplishments as social smiling, sitting alone, pull up to standing, first step and the appearance of the first word to occur much earlier than can realistically be expected. Furthermore, both mothers and fathers expected toilet training to be accomplished by 24 weeks, and fathers expected obedience training and recognition of wrong-doing to be achieved by 26 and 40 weeks respectively. In combination with the fathers' unrealistic expectations concerning how frequently infants cry, it is not surprising that de Lissovoy noted a frequent occurrence of physical discipline being used by the fathers in that sample. The lack of knowledge of developmental norms is not limited to teenage parents. De Lissovoy (1973) also found similar low levels of knowledge of infant development in a group of unmarried high school students of the same age and socioeconomic status as the teenage parents. However, caution should be taken in interpreting this study in light of the restricted sample (rural working class), the limited range of developmental norms investigated, the absence of statistical treatment of the data, and the lack of a non-adolescent comparison group.

A more methodologically sound investigation by Epstein (1979) confirmed that teenagers' knowledge of infant development is deficient--

at least in some areas. In contrast to the earlier work of de Lissovoy (1973), the adolescent females in this sample were accurate in their knowledge of perceptual and motor development but deficient in their knowledge of cognitive, social, and language development. Particularly in the case of younger infants (under 8 months of age), the teenage mothers underestimated the infant's cognitive, social, and language skills. In contrast to de Lissovoy, these mothers expected too little of their infants and viewed them as "creatures of physical needs and growth without corresponding mental activity" (Epstein, Note 2, p. 4).

However, this study has limitations. First, no males were included. Second, there was no adult comparison group; therefore, it is not clear whether or not the degree of error is greater for adolescent and nonadolescent parents. Two more recent studies have included adults in their design.

Parks and Smeriglio (1983) compared parenting knowledge of primiparous black adolescent mothers with primiparous adult mothers. They found no differences between mothers of different ages. However, since most mothers answered correctly, a ceiling effect may have obscured any potential age-related differences. In the other available study, Field et al. (1980) compared teenage mothers and older mothers in terms of their knowledge of infant development. Although adult mothers had more realistic expectations regarding developmental milestones than teenage mothers, differences in parity and marital status across the two groups make interpretation difficult.

With the exception of the exploratory study of de Lissovoy (1973), parallel studies of the knowledge of developmental timetables of adolescent fathers are not available. However, in light of the more limited opportunities that males are afforded to learn about child care during their own socialization, it is likely that adolescent males would show even more marked deficiencies.

If this lack of knowledge among teenage parents is substantiated by future research, it has important implications since lack of knowledge may affect the nature of their interactions with their infants (Parke, 1978). As Chamberlain (1979) and his colleagues found, a gain in mother's knowledge of child development was significantly correlated with the reported occurrence of more positive contact with their children.

Interest in Infants in Adolescent Males

In spite of the potential parenting skills which males and females may exhibit, the related question concerning <u>interest</u> in parenting merits attention as well. In a series of studies by Feldman and her colleagues (Feldman, Nash, and Feldman, 1981) in which the responsiveness of adolescent males and females to an infant in a laboratory setting, then found that 14- to 15-year-old males were more likely than

females to ignore social bids by infants. (See also Frodi and Lamb, 1978.) In a related test, when asked to choose their favorite pictures from a variety of different photographs, male adolescents chose fewer baby pictures than did female adolescents (Nash and Feldman, 1981). On the other hand, these differences are not stable traits which differentiate males and females; instead the sex differences disappeared in older teenagers. By 18 to 19 years of age, Nash and Feldman found no difference in responsivity to babies between males and females. Teti and Lamb (1986) suggest that the "tendency to avoid female-typed behavior--may be especially pronounced in early- to mid-adolescence as a defense against the uncertainties of sexual maturation and identity formation". Independent indices of self-identity and sex role definition among adolescent males and females of different ages would help clarify this issue.

Fathers and Infant Care: Competence and Performance

In spite of the lack of preparation, interest and possibly knowledge, it is important to examine directly fathers'competence in caregiving. Since there has been only a very limited amount of research on the nature of interactions between adolescent fathers and their infants, work on older fathers and their offspring will be examined as well. Briefly, these studies show that it is important to distinguish competence and performance. Although fathers generally perform caregiving functions less than mothers, observational studies indicate that older fathers are capable caregivers. Specifically, they are responsive to infant cues during feeding (vocalizations, feeding disturbances) and the amount of milk consumed by babies when fathers and mothers bottle feed their infants is approximately equal (Parke and Sawin, 1976, 1980).

Are adolescent fathers competent? There has been a surprisingly small amount of attention devoted to the fathering ability of adolescent males. In contrast, there has been a number of studies of adolescent mothers. As these are reviewed elsewhere (Hofferth, this volume; Lamb and Elster, 1985), it need only be noted that, in general these studies suggest that teenage mothers are less sensitive, show less positive affect, and engage in less verbal stimulation. In spite of interpretive problems (Lamb and Elster, 1985), the studies of teenage mothers suggest a less than optimal pattern of parenting.

The only available observational study of teenage father-infant interaction was recently reported by Lamb and Elster (1985). Teenage mothers (average age 17.7 years and their male partners (age range 16.5 to 29.9 years) were observed together in their homes interacting with their six-month-old infants. While mothers engaged in more interaction of all types with their infants (affectionate, stimulative, and care-related than fathers, there were no differences between fathers of different ages. Moreover, the patterns observed were comparable to the findings of comparable studies of adult parents and infants (Belsky,

Gilstrap and Rovine, 1984; Lamb, 1981). However, this study presents interpretative problems.

First, the lack of a contrast group of adult parents makes direct comparison with the earlier studies in which deficits in maternal behavior were found difficult. Second, some of the qualitative dimensions of parental behavior, such as responsiveness and verbal stimulation which discriminated between adolescent and adult parents, were not measured in this study. Therefore, it is unknown whether adolescent fathers resemble adolescent mothers in the use of inappropriate parental behaviors.

There are a variety of lines of evidence which are relevant to the issue of paternal competence. First, studies of the level of inadequate parenting such as child abuse among adolescent fathers reveals that abuse rates are not higher for adolescent fathers where the father is directly implicated as the abusing agent (Bolton and Belsky, 1986).

Evaluation of competence, however, involves more than the mere lack of inappropriate parenting behaviors. To evaluate more directly the quality of father-infant interaction requires direct observation.

Finally, comparison of fathers of differing ages who are all partners of a teenage mother may not be the appropriate comparison. A better comparison group for contrasting teenage fathers is non-teenage (i.e., adult) fathers whose female partners are also adult. Previous research (Nakashima and Camp, 1984) suggest that older fathers paired with adolescent mothers are more similar to adolescent fathers than to older men paired with older women.

On the basis of the available data, no firm conclusions can be drawn concerning the competence of teenage fathers.

The Adolescent Father's Impact on the Child and Mother

Given the variations in the level and nature of adolescent father involvement during infancy, it is likely that the father influences his infant's development in a number of ways. Specifically, we can distinguish between direct and indirect influences (Parke, Power, and Gottman, 1979). Direct influences involve those instances where the father influences his infant's social or cognitive development as a result of direct interactions between father and infant. Indirect influences are those cases where the father influences infant development through his effects on another person, with that other person directly influencing the infant.

Direct influences. Fathers influence both the social and cognitive development of their infants. Let us consider each of these developmental domains.

The degree of infant social responsiveness varies with the amount and type of paternal involvement (Parke, 1979, 1981; Lamb, 1981). For example, in their study of 8-9 month-old infants, Pedersen and Robson (1969) found that paternal involvement in routine caretaking, emotional investment in the infant, and the stimulation level of paternal play, were positively related to the male infant's attachment to his father (as assessed by the age of onset and intensity of greeting behavior directed to the father). In light of this work, it is not surprising that infants in the first year of life show no consistent preference for either mother or father in nonplay situations (Clarke-Stewart, 1978a; Lamb, 1977a)--a clear challenge to Bowlby's (1969) ethological theory which suggested that infants will prefer their mothers to their fathers.

Just as the quantity and quality of nonadolescent father-infant interaction is related to the social development of infants, there is some preliminary evidence suggesting that the involvement of adolescent fathers with their children facilitates their child's social development in the preschool years (Furstenberg, 1976). In a follow-up study of adolescent parents, Furstenberg compared the social adjustment of preschool children of adolescent parents who had married and therefore had regular father contact, with children of mothers who remained single. The children in the father-absent homes were lower on a variety of social adjustment measures: efficacy, trust, and self-esteem, but not delay of gratification.

According to Furstenberg (1976), lack of father participation is related to another index of social adjustment-the number of behavioral problems which were reported by mothers. In father-absent families, 43 percent of the children had two or more behavioral problems and almost half of the children had two or more chronic problems in families in which the father had only occasional contact with his child. In contrast, less than one-third of the children living in unbroken homes experienced two or more chronic problems. Similar findings have been reported by Barnard (1978) who found that infant physical accidents were lower as the level of father participation increased.

There also appear to be positive direct influences of involvement, by either nonadolescent or adolescent fathers, on the cognitive development of their children as well. In their study of 5- and 6-month-old male infants (Pedersen et al., 1979), Bayley mental test scores were positively correlated with the amount of father contact. In addition, the cognitive performance of male infants from father-present homes was higher than male infants from father-absent homes. Girls were apparently unaffected by the level of father involvement or by his absence. In a more detailed examination of the components of father-infant interaction in a sample of 16- to 22-month-old infants, Clarke-Stewart (1978a) reported that the fathers' physical play best predicted boys' cognitive development, while the quality of the fathers' verbal interaction was a better predictor for female infants' cognitive status. Studies with preschool-age children show a similar trend: the avail-

ability and level of father participation is positively related to preschool cognitive performance, especially for boys (Radin, 1976). Studies of children of adolescent parents are consistent with this general picture. Specifically, Furstenberg (1976) found that cognitive performance of preschoolers was positively related to the continuity of the relationship between an adolescent father and his child. Children from homes in which parents married early and remained married performed at a higher level than children from homes where they had irregular or no contact with their fathers.

Further indirect evidence of the impact of paternal involvement comes from a recent study by Furstenberg and Talvitie (1980). The focus of the study was on the extent to which children share their fathers' name, these investigators found a clear relationship between naming patterns and paternal involvement in families of never married fathers. When children bore their father's name, they were much more likely to have regular contact with their fathers and to receive economic assistance from them. Though the paternal surname was connected to greater paternal involvement for both sexes, boys who also bore their fathers' given names enjoyed even higher levels of interaction and contact. Although bestowal of the father's name may be merely an "expression of prior sentiment, an acknowledgment of the father's willingness at the time of birth to play an active part in the child's upbringing," (Furstenberg and Talvitie, 1980) other evidence suggests that naming may, in fact, play a causal, although minor role in maintaining father involvement. The extent of father contact with his child at five years was predicted better by naming pattern than by degree of paternal interaction at one year after birth. Second, the sons of formerly married couples had more contact with their biological fathers and received greater support if they bore their names. The findings suggest that naming patterns might have some direct impact on the nature of father-child relationships.

In turn, sons with the same names as their fathers were reported to have fewer behavioral problems (e.g., temper tantrums, dishonesty, bedwetting) and received more favorable ratings on their personal qualities (e.g., grown-up, happy, obedient) at five years of age. On the cognitive skills side, as indexed by the Preschool Inventory, the same named boys were significantly higher (63rd percentile) than children not named after their fathers (43rd percentile). It is assumed that naming implies greater paternal involvement, which, in turn, resulted in better social and cognitive developmental outcomes.

Indirect influences. Direct interaction between fathers and children is only one way in which fathers influence their offspring's development. Many paternal effects on the infant or child are mediated through the father's relationship with the mother or other family member. (For a general model of direct and indirect influences in the father-mother-infant triad, see Parke, Power, and Gottman, 1979.) The quality of the father-mother relationship at various times, including during pregnancy, at childbirth, and after the birth of the infant, is

an important determinant of the mother's attitudes and behavior, which, in turn, may indirectly affect the infant's social and cognitive development. The types of support--social-emotional, physical, or financial--will determine the nature of that indirect influence. Moreover, the impact on the mother can be either positive or negative.

One of the most common ways in which adolescent fathers influence the mother is through the level of financial support they provide (Furstenberg, 1976; Lorenzi et al., 1977). In their study, Lorenzi et al. found that at 3 and 15 months postpartum, approximately 64 percent of their unmarried teenage mothers were receiving financial aid from the infant's father. In fact, most couples appeared to have reached an agreement on financial matters--81 percent of the unmarried mothers who anticipated financial support from the father were receiving it at these two time points.

Results from the Baltimore study (Furstenberg, 1976; Furstenberg and Talvitie, 1980) indicate a pattern of decreasing financial support across time. At one year, nearly three-fifths of the males were providing financial assistance to the family. By five years, only one-third of the previously married fathers as well as never married fathers were providing any economic aid. Moreover, the level was modest (median of $600 per year and $1,000 per year for never married and formerly married fathers respectively). In contrast, the married fathers at the five-year follow-up were nearly all responsible for the financial support of the child. Lerman (1985) in his national survey of young fathers confirms many of these findings concerning the payment of child support. Even when fathers are absent, Lerman found that 39 percent of these fathers reported making a child support payment in the prior year. A number of factors affected the child support payment pattern. Absent fathers living with at least one own child were half as likely to make child support payments as absent fathers living away from all children (21 percent vs. 42 percent). It is assumed that these fathers were utilizing their financial resources to support the children with whom they were residing. Marriage influenced payment patterns, with fathers who were never married being less likely to make child support payments. Over 60 percent of separated or divorced absent fathers reported making child support payments, as compared to only 32 percent of the never married group. Again the impact of marital status was less evident for black than white or Hispanic males. Similarly, these patterns were modified by employment status and age. Absent fathers who were not employed made fewer and lower payments than young men who held jobs or were in the military. Marital status continued to be important even among employed fathers. Among employed absent fathers, 40 percent of never married, but 64 percent of those separated or divorced made child support payments. Moreover, the payments were approximately 20 percent of their earnings, which is nearly the proportion expected of absent fathers with one child, according to the state of Wisconsin child support program.

Such support operates directly by making available to the mother many of the necessities for adequate infant care; and it indirectly affects the quality of mother-infant interaction by influencing the mother's feelings of economic security. Altering the mother-infant relationship might, in turn, affect the infant's subsequent development.

Adolescent fathers may indirectly influence their offspring by providing emotional support as well. Feiring and Taylor (1980) found that maternal-infant involvement was positively related to other mother's support from a secondary parent--67 percent of these secondary parents were fathers. Emotional support from the father is particularly important during adolescence in light of the high degree of social prejudice and interpersonal tension characterizing adolescent pregnancy and parenthood (Furstenberg, 1976). However, the level of emotional support that married adolescent parents provide for each other is not high. In a recent study (Lamb, Elster, Peters, Kahn, and Tavere, 1986) of 272 adolescent mothers and their partners, only 33 percent of the women and 44 percent of the men identified their partners as one of two sources of emotional support--in spite of the fact that these couples were married. For adolescent mothers who had not married their male partners by the time of delivery, the rate of identification of the father as a support figure was only 25 percent. If the relationship between the adolescent mother and her parents becomes stressed as a result of the pregnancy, then we might expect that the support of the father of the child becomes particularly important in relieving this stress. In turn, such a reduction in maternal emotional stress might lead to an increase in her subsequent involvement with her infant. However, in light of the recent data from the Lamb et al. study (1976), adolescent fathers do not appear to be a major source of emotional support for their partners.

Although providing support is one of the most common ways in which adolescent fathers have an indirect effect on their infant's development, there are other types of indirect influence. Consensus in childbearing attitudes, the father's perception of the mother's caretaking competence, and other qualities of the husband-wife relationship are all related to maternal involvement or competence in studies of non-adolescent fathers. (See Parke, Power, and Gottman, 1979 for review.) It is likely that in these and other ways, young fathers have an indirect influence on their infants' cognitive and social-emotional development. Furthermore, we might expect that the less the degree of actual father participation in infancy (fathers who visit versus those who live-in), the more important indirect influence becomes.

However, the impact of the adolescent father should neither be overemphasized nor should it be assumed that the impact will always be positive and helpful. In some cases, the involvement of the adolescent father can have negative consequences for the mother. This is illustrated by a recent prospective study of child abuse. In this study, 960 adolescent mothers have been followed by Bolton and his

colleagues (1985). 190 of these adolescent mothers were assessed at "high risk" on the basis of a variety of psychological, social, contextual, and child characteristics (see Parke and Collmer, 1975; Belsky, 1980; 1984). A follow-up study of these mothers, the fathers or the males currently involved with the mothers and the health behavioral characteristics of the children at age two was executed. Only 9.5 percent of the adolescent mothers initially assessed as at risk were officially reported to have abused their child by two years of age. Of particular interest in the present context is the role of the father. While no fathers were directly implicated in the cases of reported abuse, Bolton's analysis suggested that fathers may indirectly increase the likelihood of abuse. First, the fathers in the high-risk group were older than the mothers, but only 50 percent were adolescents. They were poorly educated (mean = 10th grade) and occupationally at the lower end of the employment spectrum and one-third were unemployed. Regardless of age, only 15 percent of the couples reported sharing any child care responsibilities, while other problems were evidenced (21 percent alcohol problems, 11 percent drug problems); 7 percent were reported by the mother to be violent and 9 percent had criminal records. All of these factors were slightly more prominent among fathers paired with mothers who eventually maltreated the children (Bolton, MacEachron, Laner, and Gar, 1985). The father's role is further implicated by the fact that maltreating mothers were twice (44.4 percent) as likely to be married than were the non-maltreating mothers (21.5 percent). However, 20 percent of these married fathers did not live with the mother and child and only 50 percent contributed to the financial support of mother and child. Unfortunately, the mother's contribution to these outcomes by selecting men with these characteristics was not assessed in this work and merits consideration. Nevertheless, this study underscores the necessity of considering the negative as well as the positive impact of adolescent fathers on mothers and children.

As Bolton notes, "One buffer in the family situation seemed to be provided by the young fathers' families. No officially reported maltreatment has yet occurred among adolescent parents who live with the fathers' parents or who are receiving financial support from the fathers' parents. In the absence of this external support system however, the presence of a male, at least in the 'high risk' group appeared to increase risk" (Bolton and Belsky, 1985). However, the determinants of when grandparental support will be available to young adolescents is unclear. It is well documented that maternal grandparents often assist the adolescent mother in rearing her infant (Furstenberg and Crawford, 1981) but the extent to which the level of this support varies as a function of the degree of involvement of the male partner is still not clear. As Lamb et al. (1986) recently reported one determinant of grandparental response to pregnancy is marital status of the adolescent couple. Both maternal and paternal grandparents (69 percent and 85 percent respectively) were more positive about the pregnancy if the couple was married than if they married between conception and delivery (22 percent and 26 percent

respectively) or not at all (20 percent and 34 percent for maternal and paternal grandparents respectively). In view of the potentially important role of non-partner sources of support among adolescents, increased attention to the determinants of this support is needed.

In other cases, the fathers' impact may be negligible. For example, among adolescent parents, Furstenberg (1976) found that neither marriage patterns nor paternal involvement were related to either maternal commitment or performance. Maternal warmth, confidence, and the general quality of maternal relations were no higher when the father lived with or interacted regularly with his child than when he was absent. Furthermore, there was no evidence that separation affected either the mothers' level of interest in their children nor their evaluation of themselves as parents. Maternal performance was not markedly affected by deferral of marriage. Finally, those who remained unmarried were no less interested in their children, and no less competent or confident as caregivers. There was one complicating factor--marriage to another male. Women who married someone other than the child's father appeared to encounter more difficulty in managing motherhood. In comparison to those who married the father of the child, the adolescent mothers who married other men were less confident in their parenting role, had more behavior problems with their children, and were more critical of their children.

What accounts for this general pattern of minimal impact of the father on the mother's behaviors? According to Furstenberg (1976):

> Ironically, a partial reason that the young mothers managed as well as they did with so little assistance from the child's father may be the generally high rate of family dissolution among lower-income blacks. While the broken family is hardly the preferred pattern, it is not an uncommon one, and women are prepared to raise their children with little or no help from the father. Childbearing assistance from relatives and friends also helps to offset the low involvement of the father. Moreover, since little is expected of him, even the minimal assistance provided by a nonresidential father is welcomed and appreciated. As some indication of this, over three-fourths of the mothers reported that the nonresidential father enjoyed a positive relationship with his child, a figure nearly as great as that for the residential father. In the eyes of the mother and probably the child as well, the nonresidential father comes to be accepted for what he can offer rather than denigrated for what he cannot (p. 193).

As these studies demonstrate, the father's indirect impact in the family can vary greatly and effort needs to be directed toward isolating the determinants of the nature of impact on the mother.

THE IMPLICATIONS OF EARLY FATHERHOOD FOR THE ADOLESCENT MALE

In this section, the implications of achieving fatherhood during adolescence for the male himself will be examined. Three aspects will be discussed: (1) marriage and divorce rates; (2) education attainment; and (3) economic and occupational outcomes.

Impact on Marriage and Divorce Rates

Among both men and women, Card and Wise (1978, 1981) found that adolescent childbearing was associated with a young age at first marriage. Second, the proportion of teenage parents who were separated or divorced was higher than that of their classmates at all time periods (1, 5, and 11 years after expected high school graduation). Even after controlling for age of first marriage, the association between age at first birth and subsequent separation or divorce was significant.

Moreover, adolescent childbearers had been married a greater number of times than the classmates. This was true for both males and females at both 5 and 11 years after high school. In view of the disruptive effects of divorce on both adult and children's social and emotional lives (Hetherington and Camara, 1984), this poses a serious problem.

Educational Attainment

There are clear educational implications of early childbearing for both males and females. Card and Wise (1978) in their analysis of Project Talent data found that there is a direct linear relationship between age at first birth and amount of education five and eleven years after the date of their expected high school graduation. It is generally assumed that the consequences of early childbearing are more direct and severe for young females than for young males (Card, 1977; Card and Wise, 1978). While males are not immune to the impact of early fatherhood, as Marsiglio (1986) notes, "many of the consequences are contingent upon the father's willingness to assume a degree of responsibility in raising his child. In the context of American society assuming this responsibility usually entails some type of commitment to the mother, usually in the form of marriage" (1985). To the extent that the adolescent father disassociates himself from the child and/or the mother, he may minimize the negative impact of early paternity on their own social or educational trajectories.

In view of this distinction, it is necessary to keep separate in our discussion, males who do and do not accept the social and economic responsibilities associated with early fatherhood.

A number of factors influence the adolescent fathers' educational attainment. Timing of the onset of fatherhood is important. Morgan

(1984), in a study of high school drop-outs, found that the drop-out rate was higher among 10th and 11th graders than among 9th and 12th graders. Moreover, those who are one or more years behind their normal age-grade are more likely to drop out than those who are on schedule educationally. The implication of these data for adolescent fatherhood is clear: early timing of fatherhood may accelerate the rate of drop-outs from the educational system.

Recently, Marsiglio (1986) drew upon the NLSY Study, a nationally representative panel study of youth between 14 and 22 who were interviewed in 1979 and again in 1983. The probability of dropping out of high school for those who had a birth while in their teens (.44) is higher than for those who either fathered a child when they were 20 or older (.22) or who were childless at the time of the 1983 follow-up survey. Stated differently, only 67 percent of teenage fathers graduated from high school in contrast to 87 percent of males who had not been teenage fathers. Moreover, among the teen fathers who graduated twice as many earned a G.E.D. (12 percent in comparison to non-teen fathers (6 percent). The importance of this finding stems from the fact that the G.E.D. may not be treated as equivalent to a regular high school diploma in the employment marketplace. There are some racial differences as well: white and Hispanic males showing more disruption of their high school careers as a result of fathering a child than black males. Fifty-three percent of white teenage fathers graduated in contrast to the 91 percent graduation rate of white males who did not father a child as a teenager. The figures were 49 percent vs. 75 percent for economically disadvantaged whites and 39 percent vs. 72 percent for Hispanic males. Although there was still a significant impact on black males, the effect was less pronounced. Sixty-eight percent of black teenage fathers graduated in comparison to 76 percent of non-fathers. Marsiglio (1986) suggests that "part of the reason why there is only a modest difference between black teenage fathers and their comparison group in terms of high school completion probabilities has to do with the social acceptability of early childbearing within the black subculture, evidenced by the tendency for blacks to have their first child out of wedlock" (p. 15). Surprisingly, drop-out rates were not affected by marital status or whether or not the father lived with their child. One limitation of the study which Marsiglio (1986) acknowledges is the inability to take into account temporal sequencing of educational measures relative to birth events. Therefore, it is unknown whether a male had already dropped out of school at the time when he achieved fatherhood. An alternative interpretation is, therefore, that males who leave school early may be more likely to achieve early onset of fatherhood.

Support for this possibility comes from Lerman (1985) who found that young men who become absent fathers had poorer academic records prior to becoming a father. Of 18-20 year-olds with no children in 1979, only 12 percent of the mena who remained childless by 1983 were school drop-outs in contrast to 40 percent of the men who became absent fathers and 23 percent of men who became fathers living with their

children. Similarly, Lerman (1985) reported that 36 percent of absent fathers and 27 percent of present fathers had not completed more than 11 years of schooling in contrast to 17 percent of childless young men. Lower levels of school completion may have either caused or resulted from lower than average math and reading skills. Lerman (1985) found a consistent profile of lower scords on mathematics and word knowledge and reading comprehension among young fathers in comparison to childless young men.

Finally, a combination of early marriage and parenthood may be another correlate of lower academic attainment. Initially married youths were much more likely to be high school dropouts (77 percent) than adolescent fathers who either married between conception and birth or not at all (43.5 percent). (Lamb, Elster, Peters, Kahn and Travers, 1986).

Together, these studies indicate that the direction of causality between early fatherhood and educational attainment is probably bi-directional and further research is necessary to determine when early fatherhood leads to early termination of education and when the reverse is true.

Occupational Impact

The occupational impact of adolescent parenthood is again greater for females than males, according to Card and Wise (1978). For males, at one and five years after high school, more males who had been adolescent fathers were working than was true of their classmates.

Employment patterns, however, vary depending on whether of not young fathers are living with their children or absent. Lerman (1985) found that young men who lived with at least one of their children had higher rates of employment than absent fathers. However, 11 years after high school when the two groups were 29 years old, there were no differences. Early fathering was related to early entry into the labor force, but was unrelated to any long-term rate of labor force participation. Eleven years after high school, adolescent fathers were over-represented in the blue collar job categories, and underrepresented in the professions, reflecting their divergent educational attainment.

However, there were no significant difference in income between adolescent fathers and their classmates. As Card and Wise note, this may be only temporary. "At 11 years after high school, their classmates' investments in education have only begun to be reflected in increased income. It may be expected that as time goes on, the classmates' income will surpass that of the less educated teenage fathers" (Card and Wise, 1978).

In contrast, females have less prestigious jobs have lower incomes and are less satisfied with their jobs than their classmates at all

time periods even though the labor force participation rates do catch up and surpass those of their classmates as the latter begin their childbearing years.

These differences between males and females reflect the fact that females, in most cases, assume greater responsibility than males for rearing the offspring.

CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

An understanding of the adolescent father requires recognition of te multiple developmental tasks that face adolescents. While current research suggests that adolescent males are generally not ready for fatherhood, little research has systematically documented the ways in which the developmental status (social, cognitive, emotional and physical) of the male either affects his likelihood of becoming a father during adolescence or alters the quality of his enactment of the fathering role. The approach to adolescent fatherhood in terms of an analysis of developmental tasks recognizes the individual variability among adolescents not only across age but also within the same age period. This approach recognizes that there are significant individual differences among adolescent males and the tendency to treat adolescents as a single class has led to a failure to systematically examine these variations across adolescents (Belsky and Miller, 1986).

Patterns of contact and involvement with either the mother and/or their child are highly variable across adolescent males. Multiple patterns ranging from the extremes of marriage and cohabitation to no contact are found with many variations of levels and types of contact. However, the rates of contact are sufficiently high to correct prior assumptions that adolescent fathers are, as a group, uninvolved and uninterested. The determinants of living arrangements and type of contact between adolescent fathers and their partners and children are poorly understood.

It is important to recognize that the male partners of adolescent mothers represent not only adolescents but a wide range of older, nonadolescent males as well. With few exceptions (e.g., Nakashima and Camp, 1984) there is very little known about the similarities and differences between male partners of adolescent mothers who are adolescents themselves or older. In light of the fact that educational and occupational stability is more likely to be achieved among older vs. younger males, the age status of the male partner may have important implications for the impact of the onset of parenthood for the males themselves as well as for the role that they could play in financial and social support of their partners and offspring. Limiting our analysis of adolescent childbearing and childrearing to <u>adolescent</u> male partners alone is clearly an oversimplification of the problem.

Not surprisingly, we still know relatively little about the adolescent males' abilities to parent. First, more research is required concerning the adolescent males' knowledge concerning child developmental timetables. By comparing male and female knowledge, we can evaluate the common assumption that females are better informed concerning the course of infant development and therefore better prepared to assume a parenting role than males. Adequate observational studies of adolescent fathers and mothers interacting with their infants and children are needed in order to evaluate the actual parenting competence of adolescent males and females. Evaluation should include fathers alone with their infants as well as observations in the family context of mother, father, and infant. Available research indicates that adolescent fathers do not differ from older fathers of adolescent mothers; future studies of non-adolescent fathers whose partners are also non-adolescents are necessary in order to determine whether adolescent and adult father differ in their parenting skill.

What are the effects of adolescent fathers on their offspring? Tentative evidence suggests that paternal contact is associated with enhanced social and cognitive development of children,but the amount of evidence is still too meager to draw strong conclusions about the beneficial or deliterious effects of adolescent fathers on their offspring. Research which addresses patterns of contact over time between fathers and their children in both married, unmarried as well as separated and divorced fathers are ncessary in order to determine whether both quality and quantity of parental contact affects the development of their offspring. In light of the long-term behavioral and educational problems of both boys and girls evidenced in the follow-up of the Baltimore project (Furthenberg and Brooks-Gunn, 1985), evaluation of the moderating impact of the father on these outcomes would be worthwhile.

Another issue is the relative impact of the male partner in comparison to other potential childrearing agents who may be available to assist the adolescent mother such as the maternal and paternal grandparents on the subsequent development of both the infant and the mother. Is it better to involve the male partner in the early childcare of the infant even if this means interfering with the educational and occupational trajectory of these individuals? Does involvement of the male partner modify the level of support provided by maternal or paternal grandparents? If decreased involvement of grandparents is a result of increased male participation, what are the consequences of this decreased involvement for the mothers and/or infants?

Adolescent fathers support their partners socially, emotionally and financially. A significant proportion of adolescent fathers contribute financially--even among absent fathers, with previously married fathers contributing more than never-married fathers. More research on the determinants of financial support patterns among absent adolescent fathers is needed. The role of social and emotional support provided by adolescent males for their partners is still poorly under-

stood and research concerning the quality of relationships--marital and non-marital--between adolescents would be worthwhile.

This research would be helpful in understanding the high levels of divorce among adolescents. In addition exploration of the impact of marital dissolution on the young males themselves in terms of their fathering role would be of interest.

Finally, occupational and educational status is related to adolescent fatherhood. While the occupational impact of achieving fatherhood during adolescence is less for males than females, further evaluation of life-time career trajectories of adolescent fathers is necessary to estimate the long-range implications. Educational attainment of adolescent fathers is clearly lower than childless adolescents. However, more research is needed to evaluate the causal direction of these effects in light of evidence that early termination of formal education may be a precursor of adolescent fatherhood.

In summary, by increasing our attention to the role of the male in adolescent pregnancy, childbearing, and childrearing, we may not only better understand the issues but be guided to more effective prevention and intervention programs and policies.

An overall recommendation concerns the general lack of sensitivity to the age of the adolescent male in the current literature. It is important to examine the age of the adolescent male in future studies and if possible go beyond age per se and begin to specify the male adolescent's social, emotional, and cognitive status. This approach recognizes that there are significant individual differences among adolescent males. The tendency to treat adolescents as a single class has led to a failure to recognize the variations across adolescents (Belsky and Miller, 1985). By recognizing this diversity, clearer intervention recommendations could be offered, which are more sensitively gauged to the developmental status of the target population. For example, it is unlikely that parenting programs for very young males will be either successful or advisable in terms of their probable benefit for either the mother or child, due not only to the relative immaturity, but also due to their educational and employment status.

More work is necessary to understand the male role in contraception. Specifically, the determinants of male vs. female utilization of contraception needs more examination. This issue needs to be explored in the context of adolescent social relationships to determine more clearly the male role in decision making in different types of social relationships (i.e., casual vs. steady) and at different phases of a stable dating relationship.

More attention should be paid to the male role in the resolution of pregnancy outcomes. Little information is available concerning the male's role in abortion decisions nor are the effects of the abortion experience on males well understood. Similarly, more information con-

cerning the role of male partners in contrast to family and friends in adoption decisions would be helpful.

Not surprisingly, we still know relatively little about the adolescent males' abilities to parent. First, more research is required concerning the adolescent males' knowledge concerning child development timetables. By comparing male and female knowledge, we can evaluate the common assumption that females are better informed concerning the course of infant development and therefore better prepared to assume a parenting role than males.

Second, adequate observational studies of adolescent fathers and mothers interacting with their infants and children are needed in order to evaluate the actual parenting competence of adolescent males and females. Evaluations should include fathers alone with their infants as well as observations in the family context of mother, father, and infant.

Third, what are the effects of adolescent fathers on their offspring? Research which addresses patterns of contact over time between fathers and their children in both married, unmarried as well as separated and divorced are necessary in order to determine whether both quality and quantity of paternal contact affects the development of their offspring. In light of the long-term behavioral and educational problems of both boys and girls evidenced in the follow-up of the Baltimore project (Furstenberg and Brooks-Gunn, 1985), evaluation of the moderating impact of the father on these outcomes would be worthwhile.

More attention needs to be given to the development, implementation, and most critically, the systemic evaluation of programs aimed specifically at males. In light of the different developmental course followed by males and females in the timing and pattern of the emergence of sexual behavior and in the differential role of biological and social factors in determining sexual behavior of males and females, it is questionable whether the usual strategy of similar programs for males and females is any longer justified. However, the differential role of biological factors in determining sexual behavior for males and females does not imply that social intervention strategies aimed at modifying sexual behavior of males will not be successful. The relationship between biological responses and the social environment is clearly bidirectional; just as hormonal variables can influence social behavior, social factors, in turn, can modify hormonal responses (Astwood, 1972; Rosenblatt and Siegel, 1981).

While programs to modify sexual behavior, especially efforts to encourage the delay of onset of sexual activity, continue to be developed, the success of these programs has been limited. Therefore, in combination with these programs, intervention strategies aimed at more effective utilization of contraception among adolescent males need to continue to be developed as well.

Finally, parenthood programs aimed at adolescent males need to be developed and evaluated. Caution in the implementation of parenthood programs for males should be exercised in light of the mixed evidence concerning the effects of male adolescent involvement in a parental role on mother and offspring. It is important to recognize the wide diversity of forms that adolescent father involvement assumes, from married and live-in arrangements to infrequent visitor and/or financial contributor (Sullivan, 1985); in turn, programs need to be sensitively gauged to meet the variety of definitions that fatherhood assumes among this population.

In summary, by increasing our attention to the role of the males in adolescent pregnancy, childbearing, and childrearing, we may not only better understand the issues but be guided to more effective prevention and intervention programs and policies.

CHAPTER 8

THE CHILDREN OF TEEN CHILDBEARERS

Sandra L. Hofferth

INTRODUCTION

It is clear that being a child of a teenage mother often entails numerous risks: low birth weight, complications of the mother's pregnancy and delivery, and health problems associated with poor perinatal outcomes; greater risk of perinatal death; lower IQ and academic achievement later on, including a greater risk of repeating a grade; greater risk of socio-emotional problems; a greater risk of having a fatal accident before age one; and finally, a greater probability of starting one's own family at an early age. Although there are variations from study to study, most studies that survey a representative sample from a population that has had no special interventions and is of diverse socioeconomic makeup, and that do not control for SES or other factors, find that children of teen parents are at greater risk than children of older parents for a host of health, social and economic problems.

The critical objective, of course, is to explain why being a child of a teenager entails these risks. This is important because it affects the way we plan interventions to prevent undesired outcomes. The implications of an outcome due to physical immaturity (or, in the case of an older mother, the aging process) are different from those that are due to inadequate prenatal care or to inadequate nutrition, to poverty or to ignorance. Explanation is, therefore, the goal of this chapter, which is divided into several sections, each focusing on a specific outcome: health; cognitive development and school achievement; and socioemotional development. The fourth section focuses on intervening factors: e.g., family structure, socioeconomic status, and maternal education. It also looks at the part parenting behaviors play in distinguishing adolescent from older parents and the influence of such behaviors in mediating child outcomes. Finally, the last section focuses on methodological issues and substantive issues that need further research.

Two major data sets are used in this chapter, the Collaborative Perinatal Project (CPP) and the Health Examination Survey (HES). The CPP included all patients or a random sample of all patients qualifying

for prenatal care in the 12 participating medical centers during 6 years of intake (1966-1973). The total sample size was 53,625. The children of respondents were followed at ages 6 to 8 and a subsample was again followed-up at about 12 years of age.

Cycle II of the Health Examination Survey (HES), conducted in 1963-65, consists of a national random sample of 7110 children age 6-11. The children were given health and psychological exams. Information was also collected from the mother, the school, and from the birth certificate.

Cycle III of the HES, conducted in 1966-70, consists of a national random sample of 6768 youth 12-17. The information collected is the same as in Cycle II, with the addition of a questionnaire filled out by the Youth. A small subset of children interviewed in Cycle III had also been interviewed in Cycle II.

HEALTH

Perinatal Mortality[1]

The first outcome of interest is perinatal mortality. A number of studies (see Strobino, this volume; also Makinson, 1985) report a higher incidence of perinatal mortality among teenage mothers. These studies show the relationship between mother's age and perinatal mortality as a J-shaped function. That is, it is high at very young ages, declining to a low point in the mid-twenties, and then climbing again among older mothers. The evidence is consistent that perinatal problems increase among mothers above age 30; however, recent evidence from the Danish Perinatal Study and from the Collaborative Perinatal Project in the U.S. show a linear relationship between maternal age and perinatal mortality with low rates among young women, and increasing rates with maternal age (Mednick and Baker, 1980)--or that there is no relationship (Broman, 1981), at least for ages 12-29.

There are two major types of explanations for the often found association between young age of mother and higher incidence of perinatal problems. First, it is hypothesized that the teenager is physiologically immature; thus her less desirable outcomes (see for example, NCHS, 1984:10). A second explanation is the differential social characteristics of teenage mothers-lower SES, lack of access to prenatal care, poor nutrition, poverty and ignorance (see, for example, Baizerman, 1977; Mednick and Baker, 1980). Whatever explanations are used (and different ones may hold for different age groups) should account for the higher levels of perinatal problems among both teen and older mothers.

In both the Danish and the U.S. Perinatal studies, relatively high risk groups were overrepresented.2 However, Mednick and Baker (1980: 38) argue convincingly that "In view of the unusually advantageous

treatment conditions prevailing in the university hospital samples as a group, the teenage mothers in these samples probably received considerably more intensive and higher quality treatment than teenagers in the population at large." Because a clear relationship does exist between quality of medical care and perinatal mortality rates (Mednick and Baker, 1980:39-40), the latter argue that

> The relatively lower mortality rates observed among the teenage subjects, compared with the rates in older age groups in the American and Danish Perinatal samples, are due to the provision of adequate pre- and perinatal medical treatment . . . the previously reported higher mortality rate associated with teenage deliveries was not caused by physiological characteristics of the teenage organism but rather by social factors that have the ultimate effect of lowering the quality of medical treatment received by teenage mothers in the general population.

In contrast, constitutional changes do appear to determine the increased risk of perinatal mortality with increasing age of mother at birth. The results from studies of representative samples as well as from special hospital samples show a similar relationship for mothers over 30; increased age appears to be associated with increased rate of death (Mednick and Baker, 1980).

Neonatal Health

Vital statistics data (NCHS, 1984) show that children of teen mothers are more likely to be below 2500 grams at birth than children of mothers 20 to 39, and the younger the age of the mother the higher the proportion of infants of low birth weight. In 1982, twice as many infants of 10-14 year olds (13.8 percent) were low birth weight as infants of 20-24 year olds (6.9 percent). In that year 9.3 percent of the infants of 15-19 year olds were low birth weight. Low birth weight babies are subject to higher risks of death, mental retardation, and other health problems (Williams and Chen, 1982). Low birth weight has also been implicated in poor intelligence and achievement test scores in childhood (see, for example, Edwards and Grossman, 1979; Mednick and Baker, 1980).

A second measure of neonatal health is the Apgar score. The Apgar score is a summary measure used to evaluate the neonate's overall physical condition at birth. It is a composite evaluation of five factors--heart rate, respiratory effort, muscle tone, irritability, and color--each of which is assigned a value from 0 to 2. The overall score is the sum of the five values, with a score of 10 being optimal (NCHS, 1984:12). Infants of teen childbearers are more likely to score under 7 at either one or five minutes after birth than are infants of mothers 20 to 39. These results hold for both blacks and whites, though the proportion of low birth weight infants and the percent with low Apgar scores are consistently higher among blacks than among whites.

Although these relationships appear to hold in the population as a whole, there appears to be little difference between children of adolescent and non-adolescent mothers in special samples where prenatal and postnatal care are good. Sandler et al. (1981) evaluated the relationship between the age of mother and two measures of newborn behavior: 1) the Neonatal Behavioral Assessment Scale (Brazelton) and 2) a measure of infant temperament (Carey "My Baby" scale). No differences were found on the Brazelton Scale or Carey scale between children of adolescents and post adolescents (age not defined) within the first few days after birth.

Lester et al. (1982, 1983) used the Brazelton Scale on the second day after birth of a sample of Puerto Rican and American infants of teen mothers. In addition they obtained information on a number of health measures from medical records. In a regression analysis controlling for ponderal index, gestational age, marital status, drug score, 1 minute Apgar and the number of maternal parturitional and fetal nonoptimal conditions, none of the associations between maternal age and Brazelton scale cluster scores were significant. There did appear to be an interaction in the Puerto Rican sample between a complications index and age. Infants of young mothers with few complications had a wider range of states of arousal than infants of older mothers with few complications.

In both these studies (Sandler et al. and Lester et al.), mothers received excellent prenatal and postnatal medical care through a special program for low income families. A number of recent studies failed to find any difference by age of mother in health status of neonates at birth (Apgar score, birth weight, prematurity, birth trauma, etc.) once initial differences such as differences in SES between adolescents and non-adolescents were controlled (Zuckerman et al. 1983; Rothenberg et al., 1981). Net of SES, Broman (1981) found older women to have higher birthweights among blacks, but not whites. Also net of SES, Broman (1981) found the youngest adolescents (12-15) to have lower Apgar scores than older adolescents among whites and blacks. The differences were very small, however.

Infant Health Status

The medical risk to neonates of adolescent childbearers does not appear to be biological, but, rather, due to differential access to adequate medical care (Mednick and Baker, 1980). Less research has focused on the effect of age of mother on the health status of infants, that is from the first 28 days to one year of age.

Two studies have addressed maternal age differences and infant health status (Hardy, 1978; and Mednick and Baker, 1980). Hardy presents one figure which shows that the risk of infant death after the neonatal period is higher for the infants of black teen mothers than for the infants of black older mothers. However, no differences among

whites by age of mother at birth were found. This study did not control for the SES of the mothers, however.

The Mednick and Baker (1980) study, using Danish data, looked at the physical health status of the infant at one year as an outcome measure (see Makinson, 1985, for results of other non-U.S. studies). They found that the relationship between mother's age and infant's first year physical health status was curvilinear. That is, infants of mothers under 20 and over 35 were the healthiest; those of mothers in their twenties had the most health problems. Comparing neonatal and one year outcomes, children of the youngest mothers were the best off at both points. In contrast children of older mothers were less well off at birth, but very well off at one year. This suggests different mechanisms influencing the different outcomes at two points in time: biological factors at birth, environmental factors at one year. Older mothers may have the most biological problems but the best environment. Age-related social variables may be enough to compensate for the negative biological effects seen at birth. Mednick and Baker show that the most important predictors of health status at one year were birthweight and being female. After controlling for these important factors, a number of environmental factors were associated with better child health, including an older mother, fewer previous pregnancies, and less exposure to institutional day care.

Why the infants of Danish mothers under 20 were healthiest at one year also needs explanation. Mednick and Baker hypothesized that teen mothers may have older adults to rely on for support. They found that infants living with their grandmothers had the best mean health score; infants living with both biological parents a mid-range score, while infants who lived with their unmarried mother or in an institution or foster home showed the worst scores at one year. In one analysis, after controlling for birthweight and pregnancy complications, number of nurturing adults was strongly related to a positive one year health status among children of teen mothers. Mothers in their twenties may lack the parental support of the young mothers as well as the maturity and experience that come with age.

In conclusion, it appears that once the birth occurs and survival is assured, health status varies strongly with social and environmental variables. In the case of the older mother, age implies a number of positive psycho-social and environmental aspects. In the case of the young mother, it may imply the availability of alternative caregivers to help out. The worst one-year outcomes occurred among children of 18-29 year olds. "Once infant survival is assured, environmental and social variables begin to emerge as important to the continued physical growth and development of the child" (Mednick and Baker, 1980:65).

Path Analysis of Infant Health Status at One Year

The previous analysis of health status at one year did not control for a number of other factors that might affect health: health status at birth or complications of pregnancy and delivery. The question is whether there are residual effects of non-medical variables that may impact on one year infant status. A number of studies (e.g., Sameroff, 1979) have shown that environmental factors do not have major effects on cognitive and neurological measures within the first 12 months of life. Measures of infant physical health and motor development have been shown to be sensitive to variations in prenatal environment. Good perinatal care can insure good perinatal outcomes even when environmental conditions are less than adequate. During the first year of life, environmental influences may increase in importance as the positive effects of good prenatal care wear off. Intervention postnatally is less common than prenatal medical intervention. During the year after birth, the Danish cohort studied by Mednick was more similar in medical care to the general population. Thus effects of environmental factors could be expected to show at one year.

Mednick and Baker (1980) developed a path model to trace the causal connections between background, mother's age, and intervening medical and health factors on one year infant outcomes. Background factors (spacing, mother's age, previous health, data on previous pregnancy, wantedness, use of institutional day care, SES, mother's employment and family size) were assumed to predict one year infant outcome through the following health and medical variables: complications of pregnancy and delivery, multiple births, birth weight, and neonatal physical and neurological status. Two random samples were pulled from the full sample and models were tested separately on each sample. Unfortunately the results differed substantially between the two samples. Mother's age did not have a consistent direct or indirect effect on one year physical or neurological status or one year motor development. In sample 1, older mothers had children with poorer one year physical status. In sample 2, older mothers had children with better one year neurological status (direct effect) and better one year motor development through improved neonatal physical status (indirect effect).

However, given that the same findings don't hold up in both samples, there appears to be no consistent direct or indirect effect of mother's age on infant status at age one. Infant status at age one was influenced directly by birthweight and neonatal neurological status and indirectly by neonatal physical status. In addition, exposure to institutional day care significantly reduced rating of health status at one year. Thus mother's employment showed an indirect effect via daycare on one year health status. Higher birthweight was associated with improved one year motor development.

The analysis supports the conclusion that neonatal status is strongly influenced by factors subject to medical intervention. Maternal age, SES, and even previous pregnancy history effects on neo-

natal health are weak in a sample which received excellent medical care. By age one, neonatal status exerts the strongest influence on physical and motor status. Although none of the expected background factors has an impact at age one, environmental influence on physical status can be seen through the direct (negative) impact of institutional day care, and the indirect (and also negative) influence of maternal employment.

This analysis assumed a linear relationship between maternal age and outcomes. In fact, other analyses by the same researchers have shown a non-linear relationship. The weakness of maternal age effects may be due to differential influences across the life cycle. Finally, this analysis did not and could not include the potential ameliorating influence of other adults in the home for the very young mother.

Thus although high quality medical care appears to have reduced the environmental influence on children's health over the first year, there is evidence that social conditions, which did not have an impact during that first year, at one year do have an impact.

Fatal Infant Accidents

Further evidence for the importance of environmental factors is found in a study using linked birth and death records from North Carolina and Washington State for 1968 through 1980. Wicklund et al. (1984) found a strong inverse relationship between maternal age and mortality rates from accidents for children under one, net of parity and educational level of mother (a proxy for SES). The actual mortality rate from accidents during the first year of life is actually quite low--in 1980 in North Carolina about 3 out of 10,000 live births died from accidents in the first year in Washington state the rate was 1.47 per 10,000 live births. There were substantial differences by race, maternal education and age of mother, however. Children of mothers under 20 who had 9 or more years of schooling were substantially more likely to die from accidents in the first year of life than children of mothers 20 and over with the same amount of schooling. Among children of mothers with very low levels of schooling, those with mothers 24 and younger were more likely to die than those with mothers 25 and older. Education was also strongly inversely related to infant mortality from accidents and parity was directly related. That is, mortality rates were lower for children with a more educated mother and one with fewer children. Black children had almost twice the rate of deaths from accidents in the first year as white children.

The leading causes of infant accident mortality in North Carolina were suffocation by inhalation and/or ingestion of food, and suffocation by mechanical means (e.g., in bed or cradle, by plastic bag, etc.), with transport accidents coming third. In Washington State, transport accidents were the leading cause, with mechanical suffocation and food suffocation next. Parental care is crucial for the

safety and well-being of children; and such parental care appears to be less dependable among families in which the mother is young, black, less well-educated and has more children.

Neuropsychological Status/Motor Development

The Collaborative Perinatal Project was originally designed by the National Institute of Neurological and Communicative Diseases and Stroke (NINCDS) as a study of the neurological problems of children. Children were assessed at age four using the Graham-Ernhart Block-Sort, a battery of fine-motor development tests and a battery of gross-motor development tests. The Bender-Gestalt test was the main measure of functioning for seven year olds. These tests measure motor functioning and development, an indicator of brain damage.

Three studies using the CPP have looked at the association between age at birth of the child and motor development. Marecek (1979) found no consistent evidence for a relationship between age at first birth of the mother and the child's motor development at age 4. At age 7, Marecek found a slight curvilinear relationship such that children of both older and younger mothers do slightly less well on the Bender-Gestalt test than children of mothers in their late teens and early twenties. Hardy et al. (1978), in contrast, using the Baltimore subsample of the CPP, found a significant difference in scores on the Bender-Gestalt test at age 7, favoring the children of older mothers.

Neither of these studies controlled, however, for differences in socioeconomic status of the family. Controlling for SES, Broman (1981) found that both gross and fine motor scores of 4 year olds were lower among children of black adolescent mothers than black older mothers. Only the gross motor scores were lower among the children of white adolescent mothers compared with the children of white older mothers. No analysis of motor development was reported by Broman for children age 7.

Because the results appear to be inconsistent it is reasonable to conclude, as did Marecek, that there is no evidence of a real or substantial difference in motor development/brain damage by age of mother at first birth (Marecek) or age of mother at birth of index child (Broman and Hardy et al.).

COGNITIVE DEVELOPMENT AND SCHOOL ACHIEVEMENT

The major source of data on infants and young children is the Collaborative Perinatal Project (CPP). Although a number of different researchers have utilized data from this study in their analyses, the subsamples they have used have been slightly different. As a result, the results should not be expected to be identical. Marecek (1981) used the Philadelphia subsample of the survey in her study, Hardy

(1980) used the Baltimore subsample, while Belmont et al. (1981) and Cohen et al. (1980) and Broman (1981) used the entire sample of respondents and their children. Although blacks were overrepresented in the entire sample, they were especially predominant in both the Baltimore and the Philadelphia samples. These sample hospitals served a primarily black, low SES area of their respective cities. Thus the results from Marecek and Hardy may differ from those of the other studies.

Infants

The Collaborative Perinatal Project assessed the developmental status of infants at 8 months using the Bayley Scales of Infant Development and the Infant Behavior Profile. The Bayley Test consists of two separate scales: the Mental Scale and the Motor Scale. The Infant Behavior Profile was designed to evaluate qualitative aspects of children's behavior. Finally, the 8 month exam includes summary ratings of general development based on evaluations of the examiners

Marecek found that, among blacks, first born children of mothers under 20, as a group, scored lower on the average than first born children of older mothers on the Bayley mental scale. Among whites, in contrast, first born children of mothers 20 to 25 scored lower on the average than children of mothers 18 to 19; children of mothers under 18 did not differ from the other groups. Differences are very small, however. The author then looked at the individual components of the scale. Black children of women under 20 scored lower on three components than black children of older mothers--incidental spontaneous exploration, social interaction, and awareness of object constancy. In the white sample, children of mothers under 18 scored lower on 2 components--incidental spontaneous exploration and ability to sustain attention than children of older mothers. On the Bayley motor scale there were no differences by mother's age at first birth for blacks or whites.

Ratings on the Infant Behavior Profile ranged from 1 to 5, with an extreme underresponse to physical stimuli rated 1 and an overresponse rated 5. Among whites there were no differences by age of mother. Among blacks, age of mother at first birth had an effect on three ratings. Black children of childbearers under 20 were likely to be rated weak in their responses to physical stimuli, with black sons of adolescent childbearers more likely than black sons of older childbearers to be slow in their responses. Children of older childbearers were more likely to be overly apprehensive in response to the examiner relative to children of younger childbearers. However, only a very small proportion of the sample was in either of the extreme categories--1 or 5.

On the summary ratings of black children's development (as rated by a pediatrician on a three-point scale--normal, suspect or abnormal) age was not related to development for daughters. For sons, age was

related to development. Twice as many sons of childbearers under 18 at first birth were rated suspect compared with sons of mothers 18 and older at first birth (9.2 compared with 4.1 percent). There was no relationship for whites.

Marecek draws two conclusions: 1) The effects of maternal age on infant mental development are small, and 2) Maternal age is more likely to affect boys' development than girls'. Thus on these measures little difference was found between children of older and younger mothers.

Marecek did not control for SES. In her study using the entire CPP, Broman examined the relationship between age and Bayley scale score within SES categories. Broman also found differences by age net of SES, with Bayley mental and motor scale scores higher among infants of younger (13-15 and 16-17) than older mothers (20-29). Since the differences in both studies are small, and they operate in different directions, the conclusion would appear to be that there is little difference on these measures between children of older and younger mothers.

Early Childhood

The Collaborative Perinatal Project (CPP) used the Stanford-Binet Intelligence Scale to measure the intelligence of children at age 4. Using this measure, Hardy et al. (1978) found a significant difference in IQ score at age 4 between children of black mothers who bore that child at 17 or younger and those who were 20 to 24 at that birth. The difference is about 4 IQ points on the average. There was no difference for whites.

Marecek also failed to find a difference on the Stanford-Binet by age at first birth among whites. Among blacks, age of mother at first birth had no significant effect on girls' IQ but had a marginally significant effect for boys (probability less than .08). The sons of mothers under 18 scored lower on the average than those of mothers 20 to 25 at first birth, with those of mothers 18 to 19 intermediate. Marecek finds that among children of childbearers under 18 and 18-19, boys scored lower on the average than girls, while there was no sex difference among children of mothers 20 to 25 at first birth. As a result, she concludes that boys tend to be affected more strongly by mother's first birth age than girls. Controlling for SES, Broman (1981) found a 5-6 point difference in IQ at age 4 between both black and white children of older and younger mothers, favoring the former. SES effects were larger than age effects, however.

Furstenberg (1976) also found a difference in cognitive performance between black children of adolescent parents and black children of classmates who delayed childbearing until age 18, even when differential school attendance was controlled. Cognitive performance (as measured by the Preschool Inventory) was higher among comparison group children.

Middle Childhood

Intelligence

The CPP measure of intelligence used for children age 7 was the Wechsler Intelligence Scale for Children (WISC). The WISC consists of two major scales: the verbal and the performance scales, each with 6 subtests. A subset of 7 subtests of the WISC was used on the Collaborative Perinatal Study, three verbal (information, comprehension, vocabulary) and four performance (digit span, picture arrangement, block design, and coding) subtests (Marecek, 1979).

In the Marecek study, no difference in intelligence by mother's age at first birth was found for whites. Among blacks, both Hardy and Marecek found differences by mother's age at first birth. As a group, children of childbearers under 18 tended to do less well than children of later childbearers. However, Marecek found a sex difference here. The relationship was curvilinear for daughters, linear for sons. As a group, daughters of mothers 18-19 tended to do best; sons of mothers 20-25 tended to do best. In addition, sons of childbearers under 18 tended to do less well than daughters of childbearers under 18. However, there was no sex difference among children of later childbearers. This again suggests a stronger impact of maternal age on boys on the average than on girls.

There were several differences among blacks by type of scale. On the performance scale, sons of 20-25 year old mothers scored highest; daughters of 18-19 year old mothers scored highest. On the verbal scale, sons of childbearers 20-25 scored highest. On the same scale daughters of childbearers 18-19 scored higher than daughters of childbearers under 18 with little difference between daughters of 20-25 year olds and 18-19 year olds.

Marecek (1979) estimated path models of the direct and indirect effects of adolescent childbearing on WISC scores. These models were developed only for blacks, since the white samples were too small for meaningful analyses. The variables included were age of mother at first birth, mother's education, mother's marital status, number of parents in the household, per capita income, and child's behavior control. The results showed no direct effect of mother's age at first birth on child's IQ score. There were small indirect effects through mother's marital status, number of parents in the household and per capita household income which were stronger for males than for females. The models were, unfortunately, unable to explain much of the covariance in terms of other variables in the model, either because 1) some important intervening factors may have been left out or 2) there may be some direct effects not captured by the variables in the model. The total correlation between age of mother at first birth (1=under 18; 0=18-25) and IQ score was -.042 for males on the verbal scale, -.102 for males on the performance scale, -.105 for females on the verbal scale and -.017 for females on the performance scale. The

total indirect effects identified were -.038, -.039, -.024 and -.014 respectively.

The results suggest that age of mother is related to both verbal and performance IQs among black male children but only to verbal IQ among black female children. However, the relationship is very small, accounting for less than one percent of the variance in children's IQ scores, and, furthermore, is indirect (Marecek, 1979). Of course, the sample was relatively homogeneous with regard to SES, and mother's age was restricted to a maximum of 25 years.

Broman (1981) found, using the whole CPP, that scores on the WISC for seven year olds were only marginally associated with maternal age among whites, and unrelated to maternal age among blacks, controlling for the effects of SES. SES effects were very large, in contrast.

The second major national study which collected data on children is the Health Examination Survey (HES), Cycles II and II. Cycle II collected data on children 6 to 11 in 1963-65 and Cycle III collected data on children 12-17 in 1966-70. There is some overlap in the samples of Cycles II and III, that is, some of the same children were interviewed in cycles II and III. Belmont et al. and Cohen et al. both used Cycles II and III as well as the Collaborative Perinatal Study. Levin (1983) used cycles II and III of the HES only. Davis and Grossbard-Schectman (1980) used Cycle II of the HES. Two subtests of the WISC, vocabulary and block design, were included on the HES.

Belmont et al. attempted to address the issue of whether there was a unique disadvantage for children's intelligence of having a mother who was a teenager. Thus they used a measure both of mother's age (in years) and a dummy variable indicating whether or not the mother was a teenager at the birth of the study child. They found a linear relationship between maternal age and the IQ score of the child (WISC) in all three surveys; however, they found no evidence of excess disadvantage to the offspring of mothers under 20 above and beyond the linear relationship. (For example, children of mothers age 20 do less well than children of even older mothers).

Belmont el al. found the contribution of maternal age in years to be very small, contributing less than 1 percent of the variance explained in intelligence. The contribution of teenage mother status was even smaller. The most important factor explaining variance in child's intelligence was education of the parents. Family size, age and sex of the child were also important. They found some interesting subgroup differences and interactions. In particular, they found that the impact of mother's age at birth of the study child was stronger among 6 year old than among 11 year old children. It was stronger among urban than rural children, among blacks than whites, and among children in larger families. IQ scores were lower for blacks than whites overall. Finally, scores of children in the CPP, which is from a lower SES population, were lower than those of children in the HES Cycles II and III.

In general, the results from the three data sets were very similar. The authors' (Belmont et al.) conclusion was that the offspring of teen mothers suffer IQ depression only because of associated social disadvantages and not because of any "immaturity of the mother."

Cohen et al. (1980) also conducted a path analysis on these data to attempt to tease out some of the causal sequences leading to lower intelligence scores of the children of teen mothers. Here again, the authors looked at the influence of maternal age in years as well as whether the child's mother was under 20 or 20 and over. There was no direct effect of teen maternity on the child's IQ. The results showed that the effect of linear maternal age was significant in five of the six samples (three surveys and two race groups) after controlling for a number of other factors. The exception was blacks in Cycle III of the HES. The size of the effect was rather small, however; approximately .09 to .21 IQ points per year of maternal age. Again, the results from the three surveys were similar. There was no apparent difference either by age of child (6-11 versus 12-17) or by type of population (low income versus all income levels).

The effect of maternal education is much larger--approximately one IQ point per year of maternal age among whites, somewhat less (.4 to .9) in the black sample (Cohen et al.). The effects of paternal education were smaller. Maternal employment had inconsistent effects--a negative impact in HES Cycle II and a positive impact in the CPP. Father absence and large family size both had negative effects on IQ.

Even though teen maternity (being a child of a teen mother under 20 compared with being a child of a mother 20 or older) had no direct effect on IQ, it had several indirect effects (Cohen et al.). The largest of these was through maternal and paternal education. The total mean IQ difference for whites ranged from -2.45 in the HES Cycle III to -2.71 in the CPP to .4.22 in HES Cycle II. Among blacks the indirect effect was only significant in the CPP, 1.00 IQ point. Teen mothers were more likely to have had less schooling, which reduces their children's IQ. Family structure had a smaller, but significant impact. Children of teen mothers were more likely to live in homes not headed by both biological parents, and this was associated with lower IQ scores. As a result the total mean difference between the IQ scores of white children of teen mothers compared with those of white children of older mothers ranged from .2.45 in the HES Cycle II to -2.71 in the CPP to -4.22 in HES Cycle II. The IQ scores of black children of teen mothers were significantly lower by one IQ point only in the CPP.

Linear maternal age had both direct and indirect effects. Here the direct effects dominated (Cohen et al.). The major indirect effects operated through family size, in particular the number of births subsequent to the study child (since birth order is also controlled). Delaying a first birth one year was associated with a rise in IQ of from .09 IQ points (HES, III) to .25 IQ points (HES,II) for whites.

Levin (1983) also used the HES survey, Cycles II and III. He found significant effects of mother's age at birth of the study child on WISC vocabulary and block design scores, as well as the two subtests together, controlling for sex and age of child. These relationships did not disappear when controls were introduced for race, birth order, income, education, household structure, household size and ecological factors. However, as the author pointed out, the sizes of the effects are small mother's age at birth explains less than half of one percent of the variance in cognitive variables controlling for other factors. Total variance explained ranges from .18 to .33.

Davis and Grossbard-Schechtman analyzed Cycle II of the HES. Their study focused on 10 to 11 year olds. They explored the impact of two different variables: mother's age at birth of index child and whether or not the mother was an adolescent (under 18) at birth of the study child. Children of mothers 40 and over were excluded from the study. The authors concluded that, net of other factors, having a mother who was an adolescent did reduce the scores on the WISC. However, the differences were only marginal. Having an adolescent mother was associated, on the average, with an IQ score lower by 2.14 points on the vocabulary scale (marginally significant at p .10) and by 2.15 points on the block design scale (not significant). Thus the effects of these variables were relatively small. Having a mother with a low level of education was more harmful--approximately one IQ point for each year of schooling.

According to Davis and Grossbard-Schechtman, the age of mother (in years) appeared to significantly affect WISC vocabulary scores, but not block design scores. The effect also appeared to be non-linear. At higher levels of age, the scores appeared to turn down slightly. The effect of maternal age on vocabulary scores was small--it increased about one half of one IQ point for each year of maternal age. This effect held net of a large number of other factors, including health factors. Maternal age had a significant but very small impact on grade retention. Again this effect was slightly non-linear. The probability of repeating a grade dropped as age of mother rose, but rose again slightly among children of older mothers. There was no association of age of mother with child's reading score. Finally, boys' vocabulary scores appeared to be affected more strongly than girls' by mother's age at birth. A boy's score increased with mother's age until the mother reached age 35; afterwards, the older the mother, the lower the boy's score on the average.

A third nationally representative survey of children has also been used to study the relationship between parental age at birth and the child's intelligence (Moore et al., 1985). This survey, the National Survey of Children, collected data in 1976 on 2,301 children aged 7-11 in 1,747 households. Interviews were conducted with the eligible child (or two eligible children if there were two or more children in the household), and with the parent most capable of providing information about the child, usually the mother. In addition, school information

was obtained on 1,682 of the children. Not all the children are first born, although the analyses examine the impacts of the age of mother at first birth. The measure of intelligence used in this data set is the Peabody Picture Vocabulary Test, a test that measures both innate ability as well as stimulation in the home environment. The results show that children of teen mothers are less likely than children of older mothers to do well on this test, a result which is statistically significant for whites but not for blacks (Moore et al., 1985). When the data are adjusted for the effects of mother's education, family configuration, sex of child, family income, number of siblings, and number of moves in last five years, the differences between children of mothers younger and older at first birth decline sharply. Although children of youngest mothers generally have the lowest scores, among whites and blacks the children of the very youngest mothers at first birth (those less than or equal to 15), in fact, have high scores relative to children of older mothers. Additional analyses conducted by these researchers suggest that what differentiates the scores of children is whether the mother dropped out of school at an early age and didn't return or whether she continued in school/returned and completed more schooling later on. The very earliest childbearers may be the most likely to continue/return to school and, as a result, their children may not suffer as much. However, this is still speculation, as no research yet shows this to be true. Furstenberg and Crawford (1980) suggest that those who remain at home are more likely than those who leave to obtain more schooling.

Achievement

The CPP and HES measured school achievement using the Wide Range Achievement Test, which includes subtests on spelling, reading and arithmetic. The purpose is to measure skills, not intelligence. A second measure of achievement is whether or not the child had repeated a grade of school by the time of the 7 year exam, and the mother's evaluation of the child's success in school, as reported at the 7th birthday.

Using data from a white middle and working class Northeastern community, Kinard and Reinherz (1984b) looked at children prior to entry into school, at the end of kindergarten, at grade 3, and again at grade 4. The test used at time one was the Preschool Screening System. In grade 4 the Short Form Test of Academic Aptitude and the California Achievement Test 70 were used. In addition, ratings of school performance by parents and teachers were obtained at the end of grade 3. Parents rated school achievement on a five point scale and completed the Child and Adolescent Adjustment Profile (CAAP) of Ellsworth. Teachers assessed child's reading, arithmetic and overall academic achievement on a five point scale and also completed the Ellsworth scale.

Kinard and Reinherz found that, controlling for sex and maternal education, maternal age had a main effect on only one measure: information processing skills at preschool. Children of late adolescent (18-19) mothers had lower scores than children of either early adolescent or older mothers. However, this effect did not persist over time: no difference was found at grade three or grade four. There was no effect of maternal age on achievement and aptitude test scores or on teacher and parent ratings of performance. Maternal education was the major factor affecting cognitive and achievement scores, with substantial and consistent differences on almost every measure favoring children of better educated mothers.

Vincenzi and Brewer (1982) used two samples of children, one in grade 4 and one in grade 6, from a primarily black low income area, to look at the school achievement of children of teen mothers. They found an impact of having a teen mother only for children with no preschool or kindergarten experience. Controlling for SES, AFDC receipt, and initial achievement level, children of teen mothers with no preschool or kindergarten experience tended to have lower reading scores, more absences and were more likely to be retained in grade than children of non-teen mothers with no preschool experience. In addition, the achievement scores of children of teen mothers were helped more by preschool and kindergarten than the scores of children of non-teen mothers.

The results reported by Marecek based on the CPP show among blacks a linear relationship of age of mother with scores on the three subtests of the WRAT. Children of adolescent childbearers scored lowest. On the reading subtest age of mother at first birth was a stronger predictor of scores for boys than girls. For whites, the age at first birth of the mother affected scores only on the arithmetic test, and there was no sex difference.

Broman (1981) found that children of young mothers (12-15) and 16-17 were more likely to have below average scores on the arithmetic, reading and spelling subtest of the WRAT. For example, as the mother's age increased from 12-15 to 20-29 the percent of white children scoring low decreased from 8 to 4 percent. Among blacks the percent of low scorers decreased from 19-5 to 15-5 percent. These results controlled for SES differences between younger and older childbearers.

Levin (1983) used the HES survey. Results are similar to those found with the WISC: significant effects of mother's age at first birth on the WRAT arithmetic and reading scores, as well as the full test, after controlling for sex and age of child. These relationships do not disappear when controls are introduced for race, birth order, income, education, household structure, household size and ecological factors. However, as the author points out, the sizes of the effects are small; mother's age at birth explains less than half of one percent of the variance in cognitive variables controlling for other factors. Total variance explained ranged from .18 to .33. Mother's age is also

associated with ratings of child's exceptional performance, academic difficulty, and precociousness. However, when other variables are controlled, only the relationship of mother's age with exceptional performance is still significant. Again, the percent of variance explained is very small.

Marecek found that, among whites, mother's age at first birth is unrelated to grade repetition. Among blacks she found a higher repetition rate among children of childbearers under 20 at first birth. Controlling for race, Davis and Grossbard-Schechtman found that having a mother who is young at birth of the study child does increase grade retention (indirectly through IQ). In addition, the impact of mother's schooling was found to be more significant for adolescent than for older mothers in keeping the child at grade level. That is, having an adolescent mother with one additional year of schooling decreased grade retention by almost 50 percent. In contrast, having an older mother with one additional year of schooling reduced grade retention by only about 10 percent.

Moore et al. (1985) found a strong relationship among blacks and whites between age at first birth of the mother and being behind grade for age among 7 to 11 year olds: children of younger mothers were more likely to be behind grade. The difference was substantially weakened, although it did not disappear, when controls for other variables--mother's education, family configuration, sex of child, family income, number of siblings, and number of recent moves--were added to the analysis.

Among whites, Marecek found no relationship between age at first birth of mother and mother's reports of learning disturbances in their offspring. In the black sample there is a significant relationship with age at first birth among males. Nearly 12 percent of boys born to childbearers under 20 were rated as having a learning disturbance compared with 4 percent of the sons of older mothers.

Thus there appears to be an effect of mother's age at first birth on school achievement and grade repetition. This effect is stronger for blacks than for whites and for boys than for girls. However, the effect is very small and is not found in every study.

Adolescence

Several studies have looked at adolescents: Levin (1983), Card (1978); Belmont et al. (1980). The effects of maternal age do not appear to weaken as the children grow older. Levin (1983) finds similar relationships between age of mother at birth of child and IQ and achievement scores among 12 to 17 year olds as among 6 to 11 year olds. Net of sex and age of child, mother's age at birth is significantly associated with scores on the WISC and WRAT tests and subtests, with exceptional performance, and with ratings of academic difficulty.

None of these relationships disappear when additional variables (race, birth order, income, education, household structure, household size and ecological factors) are controlled. As before, however, the proportion of variance explained by mother's age is very small--under 1 percent. Total variance explained ranges from 20 to 35 percent.

Card (1978) looked at teens at age 15 and 17. An adolescent mother was defined as a mother less than 20 (for those who were age 15 in 1960) or a mother less than 18 (for those age 17 in 1960).[3] In both cohorts children of adolescent parents had lower scores than their classmates on cognitive tests; they also had lower educational expectations. The cognitive differences were about .4 standard deviation in magnitude. However, when other factors were controlled, these differences declined. A change of one standard deviation in the proportion of the sample who were adolescent parents was associated with only about a one point change in IQ score.

Card (1978) also developed a path model. Besides the small direct effect of having an adolescent parent on academic aptitude, there was a substantial indirect effect through family structure. Children of adolescent parents were much more likely to be living with only one parent than children of older parents, and children in one-parent families had significantly lower aptitude scores, grades and aspirations.

Card concluded that the cognitive consequences of adolescent parentage were more severe for male than female children since she found that although in the comparison group males had higher mean academic aptitude scores than females, among children of adolescent parents, females had higher scores.

Mednick and Baker used data from the Danish Longitudinal Study to examine youth age 17 to 19 in 1979. They, unfortunately, did not have test scores on youth. However, they obtained from teachers ratings on reading proficiency, math proficiency, reasoning ability and work organization. From parents they obtained ratings of general problems in school and academic performance in general. In addition, they had substantial information on the health of the child at birth and in early childhood.

Net of SES they found that for males the older the age of the mother at the birth of her first child the greater the reading proficiency, math proficiency, reasoning ability, and the fewer the school problems. For females, the older the age of mother at first birth the greater reading proficiency, reasoning ability, work organization, the fewer the school problems and greater academic performance in general. Mother's age at birth of study child was also related to measures of ability and achievement, but less strongly than age at first birth. Children whose mother was not a teen when born were better at math (males) and academic performance in general (girls) than those whose mother was a teen when they were born.

In a later analysis Mednick and Baker developed a path model to test causal relationships among mother's age and other variables in the model with child outcomes. Here they used only mother's age at birth of the study child. The models were developed separately for males and females. In these models, which controlled for a number of background factors (education, family size, birthweight, and SES) and a number of intervening factors (maternal characteristics, orderliness and contentment, family stability, crowding in the home, and father's criminality), effects of maternal age at birth were weakened. For males there was no direct or indirect impact of mother's age on either mother's or teacher's judgments of child's academic performance. Among females, mother's age had no direct effect but did have one indirect effect through mother's contentment. That is, older mothers were more content, and content mothers rated their children's school performance higher than discontented mothers.

SOCIOEMOTIONAL DEVELOPMENT

The CPP data base and the home interview study conducted at the same time obtained ratings on a variety of behavioral dimensions. These ratings in the CPP were based on the examiner's direct observations of the child during the 4 and 7 year psychological testing sessions. The home interviews obtained reports of the child's behavior from the child's caretaker. The examiners' ratings were made on a five point scale, in which a "3" reflects appropriate behavior. The behaviors reported by caretakers were coded for the presence or absence of the behavior--for example, habitually bites nails. The variables available at seven years were similar to those available at the four year exam.

The Marecek study used the following from the four year psychological testing sessions: emotional reactivity; irritability; degree of cooperation with examiner; degree of dependency on the examiner; duration of attention span; goal orientation; response to directions; activity level; and indices of deviant stereotyped behavior. All 14 home interview variables were used: abnormality of behavior control; bedwetting; disruption in conduct; delay in the development of self-care; nail-biting; ingestion of non-food substances; phobic responses; sleep disturbance; thumb-sucking; social maladjustment; mechanical speech defects; defect in speech construction; stuttering; speech disturbance summary measure. (For a complete description of all measures obtained in the CPP, consult Marecek, 1979).

Variables from the 7-year examination used in the Marecek study were the following: separation from mother; fearfulness; rapport with examiner; self-confidence; emotional reactivity; degree of cooperation; frustration tolerance; degree of dependency; assertiveness; hostility; duration of attention span; goal orientation; level of activity; nature of activity; nature of communication; and indices of deviant stereotyped behavior. In addition, all 14 home interview variables were used.

Early Childhood

At age 4, Marecek found no difference among white children in reported behavioral disorders by mother's age at first birth. Among blacks, children of adolescent childbearers showed excessive conformity, insufficient ability to communicate, abnormal control behavior (girls, not boys), and excessive nail-biting.

Furstenberg found no difference between children of adolescent mothers and older mothers on four indices of interpersonal development: ability to defer gratification, efficacy, trust and self-esteem. The children were between 3 and 6 years old at the time. These were assessed by interviewers from responses to structured questions using a doll play game (see Furstenberg, 1976).

Middle Childhood

At age 7, Marecek found no differences by age of mother at first birth in socio-emotional behavior of white children. Among blacks, in contrast, boys especially showed problems in social behavior and in expression of affect. Both girls and boys of black adolescent mothers tended to show more problems controlling their behavior than children of black older mothers. Among 7 year olds, girls of adolescent mothers exhibited more bedwetting and phobias, while boys exhibited more thumbsucking. Finally, sons of adolescent mothers exhibited more speech deficiencies.

In summary, on average the effects of mother's age on socio-emotional development were more marked for boys than girls and for 7 year olds than for four year olds. The domain of strongest effect was that of social behavior. The second domain of effect was that of self-control. Children of black adolescents were at greater risk. The type of adjustment problems differed by sex, with maladjustment for boys expressed as rebelliousness, aggression or undercontrol of anger, while maladjustment for girls expressed itself as fearfulness and other "neurotic" behaviors. The effects seemed to increase rather than decrease over time. Male children of black adolescent childbearers were judged to be more openly hostile, aggressive and willful than male children of older childbearers and their mothers reported that the children had difficulty in relating to peers. These behavior tendencies may interfere with school learning and thus prevent the child from fulfilling his/her intellectual potential.

In the Health Examination Survey (HES), a number of types of information on socio-emotional development were obtained. A behavioral/attitudinal history of the child was obtained in an interview with the parent or guardian. The child/youth's psychological status was assessed by direct examination by a staff psychologist. School achievement and adjustment were obtained in a self-administered questionnaire from the child's teacher. For youth 12-17, in addition, the parent's des-

cription of the youth's health, behavior and attitudes were obtained from the parent or guardian in a self-administered questionnaire. The youth's own health behavior and attitudes and health habits and history were obtained from the youth through a self-administered questionnaire. For information on specific items see Levin (1983).

Using the HES, cycle II, Levin (1983) found mother's age at birth of the study child to be related to a few emotional and psychological adjustment variables: problems with going to bed, problems with speech articulation, and problems with individual and social activities. These were significant even after controlling for other factors among children 6 to 11 in the HES.

Kinard and Reinherz (1984a) studied the effect of maternal age on the socio-emotional development of a sample of predominantly white lower middle and working class children. Parental ratings on the Simmons Behavior Checklist were obtained at preschool screening, at the end of kindergarten and again at the end of the third grade. The Child and Adolescent Adjustment Profile (CAAP) was also used at the end of grade 3. Teacher ratings were obtained using the Preschool Behavior Questionnaire and the CAAP. Child self-concept was measured using the Piers-Harris Children's Self-Concept Scale. Finally, information on the number of years during elementary school the child used two types of school services--guidance (psychological) and special needs (academic)--was obtained.

There was no difference on prenatal or neonatal conditions by mother's age at first birth (15-17, 18-19, or 20-24), nor was there any difference on childhood health and development by maternal age at first birth. Controlling for family structure, maternal age had a direct impact only on one variable the number of years special needs (academic) services were received. This relationship was opposite from the expected--children of older mothers received special services for more years than children of younger mothers. There was one interaction: children of adolescent mothers in one-parent families had the highest mean score for attention problems while those of early adolescent mothers in two-parent families had the lowest. Controlling for maternal education, there was a direct effect of maternal age on third grade teachers' ratings of withdrawn behavior. Children of early adolescent mothers tended to have the fewest problems while children of late adolescent mothers tended to have the most.

Kinard and Reinherz concluded that children of adolescent mothers were generally no different from children of mothers in their early twenties with respect to behavior and emotional functioning. Maternal education had the greatest impact on behavioral and emotional functioning. The extent to which children of adolescent mothers are at risk for behavioral and emotional maladjustment seems to be a function of the association between adolescent childbearing and low educational attainment.

Adolescence

Among children 12 through 17, Levin found age of mother at birth of the child to be related to a greater incidence of mental problems, to delinquency, and to difficulties with social contacts even after controlling for other variables. Before controlling for these variables, children of adolescent mothers also showed more speech problems, problems of parental control and self-centered problems, and problems with "socioability."[4]

Mednick and Baker looked at the association between mother's age at birth of first or index child and measures of socioemotional development. They found that among males, with control for SES, a child of a mother young at first birth was more likely to exhibit criminal behavior at ages 17-19. Among females, those born to mothers who were adolescents at first birth were more likely to be aggressive, impulsive, emotional and to have poor peer relations. The relationship with mother's age at birth of the index child are generally consistent: among males, those with young mothers are more emotional and get along less well with adults. Among females, those with young mothers get along less well with peers, are more aggressive, and more impulsive.

In the path model, controlling for mother's education, family size, family socioeconomic status, and birthweight, Mednick and Baker found that mother's age no longer has direct effects; however it has some indirect effects on children's socioemotional development. In particular, a younger mother's age is associated with family instability among both males and females. Family instability is associated with withdrawn behavior (poor peer interaction, fearfulness and feelings of inferiority) among males and with acting out behaviors (aggressiveness, impulsivity) among girls. A younger mother's age also affects crowding in the home[5] for both males and females, but only among females does crowding in the home affect behavior: it is associated with withdrawal.

Card also found several differences between children of adolescent and non-adolescent parents. Children of adolescent parents were less sociable, less tidy, less "cultured"[6] and less mature than their classmates. Children of adolescent parents had greater interests in outdoor recreation activities, mechanical and technical matters, skilled trades, and labor than their classmates. These psychological differences were not large, however, being only about .2 standard deviation in magnitude. Children of adolescent parents also had lower educational expectations and aspirations. However, when sex, race, SES, birth order, and head of the household were controlled, the relationship between having an adolescent parent and personality traits, and interests and aspirations disappeared, whereas differences in academic aptitude remained significant.

Adulthood

Card (1978) also explored the consequences of mother's age at first birth for children 11 years after high school, approximately age 30. Net of sex, race, socioeconomic status, birth order, and head of household, children who had an adolescent parent completed less schooling, married at a younger age, and married more times than those who didn't have an adolescent parent. When, in addition, a control for academic aptitude was introduced, differences in schooling and number of marriages disappeared. The difference in age at first marriage remained. In a path model, Card also found a slight tendency toward earlier childbearing among children of adolescent parents. There were a number of indirect effects of adolescent parentage on later childbearing history, educational attainment, occupation and income. These operated through family structure, family SES in 1960 and academic aptitude. For example, having an mother who gave birth while an adolescent affected the child's academic aptitude, which affected the child's own childbearing history.

Several other studies (Presser, 1976; Newcomer and Udry, 1984) have also found that daughters of early childbearers are likely to be early childbearers themselves. Newcomer and Udry (1984) were unable to explain much of this relationship in terms of transmissable attitudes, communication patterns or behavioral control attempts. Thus they hypothesized a biological mechanism such as age at physical maturation. However, they could not rule out causes (such as socioeconomic background) that may be common to both mother and daughter. Maternal modeling is also a reasonable hypothesis: that the daughter tends to do what the mother does, rather than what she says. However, in the case of early sexual activity and childbearing, the behavior is not directly modelable since it precedes the birth of the daughter. The daughter cannot model what the mother did while she was a teenager, only what she does now.

INTERVENING FACTORS

The results from all the studies show fairly clearly that having a young mother does tend to have negative effects on a number of outcomes for the child--in particular, measured intelligence, achievement, and some aspects of socioemotional development--and these results appear not to decrease over time. However, the results also indicate that the direct effects of having a young mother are very small. Rather, most of the effects are mediated by other variables. In this section the evidence on these intervening variables is summarized by reviewing the path models researchers have developed.

The four path analyses of interest are by Mednick and Baker (1980), Card (1978), Cohen et al. (1980), and Marecek (1979). In the Marecek and Cohen et al. analyses, the dependent variable was the WISC score from the Collaborative Perinatal Project (at age 7 for Marecek and at

ages 6 to 8 in the Cohen et al. analysis). The Cohen et al. analyses also included children 6 to 11 and 12 to 17 from the HES. The Card and the Mednick and Baker analyses referred to teens 15 to 17 and 17 to 19. In the Card analysis, the dependent variables were academic aptitude in high school and childbearing history, education, occupation and income at age 30. In the Mednick and Baker analyses the outcomes were mother's and teachers' judgements of child's academic performance at age 17-19, child's acting out behaviors, and withdrawn behaviors.

Two of the studies (Card, 1978, and Cohen et al., 1980) found a small direct impact of age of the mother at the birth of the study child on academic achievement and IQ as a teenager. In the remaining studies the impact was only indirect. The studies differed considerably in whether education of mother and father were included as control variables (Card; Marecek; Mednick and Baker) or whether they were included as potential intervening variables (Cohen et al., 1980). In the Cohen et al. study, education was the most important variable intervening between teen maternity (versus later maternity) and child's IQ, with family structure contributing, but less important. In contrast, when looking at the relationship between age of mother in years and child's later achievement and IQ, family size was the most important intervening variable. The other studies used an indicator of SES instead of maternal education as intervening variable. The Mednick and Baker study used crowding in the home, which was highly associated with SES. In both the Marecek and the Card studies, the most important intervening factor was household structure, which affected academic aptitude both directly and indirectly through family socioeconomic status. In the Mednick and Baker study, mother's age had no indirect effect on the academic performance of males. However, it did affect that of females. For females, however, the most important intervening factor was mother's contentment[7]. Unfortunately, Mednick and Baker did not have actual test scores for their youth. As a result, the path analysis was not directly comparable to that of Card and of Cohen et al. Since only parent and teacher evaluations were used, it could be anticipated that response tendencies, which are affected by personality and environmental influences, might have influenced the results. That is, perceptions or evaluations by teachers might have been contaminated by their knowledge of the socioeconomic status and teen parenthood status of the mother and her family.

Mednick and Baker were the only ones to also explore the intervening factors predicting socioemotional characteristics of the children of adolescent and nonadolescent childbearers. Controlling for education of the mother, socioeconomic status of the family, family size, and birth weight, they found, as for cognitive development, that mother's age did not directly affect the behavior of boys or girls; however, it did have indirect effects. For boys and girls the strongest effects operated through family stability. For girls, in addition, there was an indirect impact through crowding in the home. Thus, in the area of academic achievement it was the characteristics

of the mother, such as her contentment[7] and orderliness[8], which appeared to exert the most direct influence; in the area of socio-emotional functioning, it was the stability of the family situation[9] that was the crucial determinant of child behavior.

Family structure appears to be one of the most important factors intervening between parental age, background factors such as SES and race and the outcomes of the child's cognitive development, such his/her later achievements. Besides the Card and Cohen et al. analyses, several other studies have examined selected parts of the model and have found family structure to be an important intervening factor. Both Menken and McCarthy (1979) and Kellam et al. (1982) found that children of mothers who were teenagers at first birth were themselves more likely to spend time with only one parent than children of older childbearers.

Kellam et al. (1977), Furstenberg (1979) and Mednick and Baker (1980) show that the family structure of the child, in turn, has very important effects on the health, cognitive development, social adaptation and psychological well-being of the child. However, the relationship is not simple. Kellam et al. found that children in mother-alone families were at highest risk of maladaptation to school, with children in mother/father or mother/grandmother families at least risk, and children in mother/stepfather families similar to children in mother-alone families in risk. Furstenberg and Crawford (1980) found that among young mothers who remained unmarried, those who lived with their parents were much better off than those who left home. Young mothers who remained unmarried and stayed with their parents were more likely to return to school and to graduate from high school; a larger proportion were employed; and a smaller proportion were on welfare. Furstenberg (1979) found that although there was little difference by family structure, children of unmarried mothers who lived in a household with kin (usually grandparents) tended to outperform those who lived with their mothers alone on one measure of cognitive skills, even though the latter children were more apt to have gone to school. Results from the Mednick and Baker analysis also supported the argument in favor of family support. They suggested that the health of infants of teens who received help from other family members was better than that of infants of teens who did not have such assistance, and that this might have explained in part why it was hard to show a difference between the children of young teens and older mothers at one year of age: young teenagers were more likely to have family assistance.

The impact of a child born to a teenager on other members of her family of origin may also be important. Furstenberg found no long-term consequences for the socioeconomic and marital and family careers of the members of the adolescent mother's family of orientation, including occupational mobility of the father, marital dissolution of the parents, and siblings' educational attainment, freedom from welfare dependency and marriage. Similarities among siblings' life courses were

probably due to homogeneity of background and not early parenthood. Taking a new child into the home did have consequences for the dynamics of the family, some positive and some negative (see Furstenberg, 1979). A second pregnancy did appear to propel the young mother from the home.

These results suggest the importance of considering whether the teen childbearer remains with her parents or starts her own household in determining the risk to the child. What factors are associated with reliance on parents, particularly remaining in the parental home? Furstenberg (1979) found the factors associated with an adolescent mother remaining in the home to include: 1) younger age, 2) a strong affective bond, 3) desire to remain in school, 4) both parents in household, 5) higher level of income/SES, 6) more physical space and less crowding, 7) no subsequent childbearing, and 8) remaining single.

One of the consistent and most important findings in the study of the effects of mother's age at first birth and child outcomes is that the education of the mother has a consistent positive impact on the intelligence and achievement of her child. The effect is consistently large, regardless of how it was included as part of the model: about 1 IQ point for each year of schooling of the mother in several of the studies (Cohen et al., 1980; Davis and Grossbard-Schechtman, 1980; Edwards and Grossman, 1979). Previous research (see Chapter 6) has shown a strong relationship between an early first birth and educational deficits among young women. Not only does lack of schooling hinder the prospects for a young woman's future employment, economic well-being, and life success, but it appears to have very detrimental effects on her children. Unfortunately, we still have very little information about exactly what education means. If we had some better understanding of what it is about education that improves children's cognitive and socioemotional performance, then we could better target programs to teen mothers. One possible link is through parenting behaviors of such mothers. This is the topic of the following section.

In conclusion, having a young parent, on average, is harmful to children; there is a small direct effect, but there is an even larger indirect effect which is due to differential characteristics of the mother (such as orderliness), to her lesser schooling, to less stable family structure, to lower family socioeconomic status, and to larger family size. The size, types of effects and causal pathways of effects differ for girls and boys, and for blacks and whites. It is clear that future analyses should develop separate models by race and sex.

PARENTING BEHAVIORS OF ADOLESCENT AND NON-ADOLESCENT PARENTS

Recently there has been increased attention paid to explaining differences between children of adolescent and non-adolescent mothers in terms of differential parenting behaviors. The rationale is that differences between children of adolescent and non-adolescent mothers might be explainable by differences in their parents' childrearing be-

havior and practices. Such behaviors (following Elster et al., 1983) result from differences between adolescent and older parents in:

1. Stress and coping, 2) social support, 3) cognitive development, 4) attitudes toward childrearing, 5) knowledge of child development, and 6) infant characteristics.

This all seems very reasonable except that the differences between children of adolescent and non-adolescent parents were found to be very small. Most of the differences we observed were due to indirect effects through other factors. Thus, for example, it may be more relevant to compare the childrearing practices of mothers living with a husband or another relative compared with living alone, or of mothers with low versus high levels of schooling and so on. There is a substantial literature developing in this area (see Hetherington et al., 1981). The small direct effect of having an adolescent mother implies that the chance of finding much difference in childrearing practices is probably very small. And this is, in fact, what the studies show.

Neither Sandler et al. nor McAnarney found significant differences in mothering behaviors during the first several days after birth. Of 48 comparisons made by Sandler et al., three were significant. They showed that the older the mother, the more time she was likely to spend out of contact with the baby, the more the total amount of vocalizing by the mother, and the less the amount of silence in the mother-infant interactions during the first days after birth. In the McAnarney study, no relationship was found between mother's age at first birth among adolescent mothers and any of eight major maternal behaviors or the counts of one major infant behavior category. Sandler also used the Cohler Scale of Maternal Attitudes toward their infants. No difference was found between adolescent and non-adolescent mothers on this scale. McAnarney (1984) reports that some differences in parenting practices begin to show up at one year, but such results are still tentative and based on a very small sample of teen mothers. Furstenberg (1976) found no difference in maternal interest, maternal performance or maternal success by age at first birth in a sample of black teen childbearers.

There is a growing body of research looking at the infant parenting behaviors of teenage and older mothers, which finds small differences between the groups (Roosa and Vaughan, 1984; Osofsky and Osofsky, 1971; de Cubes and Field, 1984; Field et al., 1985; Elster et al., 1983). One problem with the research is obtaining comparable samples of older mothers; the latter are more likely to be married, and of higher SES, for example. A second problem is sample attrition which has proven to be a problem in studying teen mothers and their infants over time (McAnarney, 1983). A third problem is that of rater bias. Since it is fairly easy to distinguish older and younger mothers, the research designs to date can't eliminate the possibility that the age of the mothers affects observer ratings. This field appears to be growing; it is really too early to judge what the results will be. For a good review of the research to date, see Elster et al., 1983.

Another area of increasing interest to researchers is that exploring the knowledge of teen mothers about child development relative to that of older mothers. Early research (De Lissovoy, 1973) found teen mothers to be ignorant of developmental norms for children's behavior and to hold unrealistic expectations. Recent research also suggests teen mothers to be less knowledgeable than older mothers about child development; however, the differences are relatively small. That is teen mothers do not rate much lower than older mothers (Roosa, 1983; Stevens, 1983).

Field and colleagues (1982; 1985) have developed a series of interventions to increase parental knowledge of child development and improve parenting, which appears to have been successful among low income and teenage mothers. Again, it is difficult to sort out the effects of SES, education and age of mother, since teen mothers are disadvantaged on all factors. Lack of control for SES may explain the inconsistencies in results from study to study and the failure to identify strong age effects. In addition, one study found that an effect of age disappeared as the mothers matured into their twenties (Stevens, 1983).

A third area in which research appears to be increasing is that of identifying the relationship of knowledge of child development to parenting practices (see, for example, Stevens, 1984; Johnson et al., 1982; Le Resche et al., 1983; Roosa, 1983).

Levin (1983) is the only one so far to find significant differences in parental childrearing practices between young and older mothers of elementary school age children. Net of sex and age of child, race, birthorder, income, education, household structure, household size and ecological factors, he found younger mothers of children 6-11 to be significantly less likely than older mothers of children 6-11 to monitor their children's behavior and to control their bedtimes. Parental monitoring refers to the last time a doctor or dentist was seen and the number of child's friends parents know well. Parental control of bedtime refers to reported problems getting child to bed and reported naps taken when child was little. The parental control variable is not statistically significant with controls for other variables among youth 12 to 17.

There is very little agreement in the child development literature on the impact of maternal behavior, if any, on child development, since the interplay between various factors is quite complex, including the influence of the child on the parent. Strong conclusions from the research on parenting among teen mothers (and fathers) are not warranted at this time.

Although a number of writers and authors have suggested a connection between adolescent parenthood and the abuse and neglect of children, there is little evidence to substantiate this link. A recent review (Kinard and Klerman, 1980) of the published papers in this area

points out that the findings of many studies are conflicting. The authors suggest that the main reason for a link, if any, is the socio-economic status of the families, not the age of the mother per se. That is, both births to adolescents and reported cases of child abuse are more common among lower SES families. Poverty may contribute both to early pregnancy and to child abuse. More work is needed in this area.

METHODOLOGICAL ISSUES

There are several inconsistencies across studies that make it somewhat difficult to compare results. These are discussed in Kinard and Reinherz (1984) and will be only briefly summarized here. The first is that age of the mother is variously defined as age of mother at first birth or age of mother at the birth of the index child. The Marecek study avoids the problem by selecting only first born children. The Kinard and Reinherz study, in contrast, uses age of mother at first birth, but the study child is not necessarily the first. The majority of studies (see Table 1) use age of mother at birth of index child. This is more likely to be the first child for adolescent than for older mothers. Thus birth order and family size are important variables confounded with age of mother at first birth.

A second issue is the categorization of age groups in comparing teenage and older mothers. The most common division appears to be under 18, 18-19 and 20 to 24. However, in some studies, the first two groups are collapsed; in some studies the third group consists of all those 20 and older. The former could be a problem if results differ between early and late teens. The latter is a problem because some of the outcomes are poorer for children of mothers 40 and older. The analyses using path models generally specify a linear age variable. However, the Cohen analysis uses both a linear and a dummy variable for age of mother. Some studies do not even specify the age groups that were used in the analysis. Finally, depending on how age of mother is defined, some mothers who are categorized as 20+ at this birth, could have been adolescent mothers at an earlier birth.

A third issue is the source of data. Studies using standardized tests and other standard scales are the easiest to compare. Most problematic are those studies that rely heavily on parent and teacher reports of behavior, since these seem so easily contaminated by parental attitudes, beliefs, and well-being. It would be very useful to have some methodological analyses that attempt to sort out the factors that contribute to response sets on such ratings and evaluations. Multiple measures by a variety of raters and evaluators would be most useful. Such measures appear in the large data sets such as the CPP and HES. This review has relied heavily on the studies using these data sets for this reason.

The fourth issue is that of control and intervening variables, and the appropriate identification of each. Most studies did control for confounding background variables such as SES. Several, in addition, looked at the influence of intervening factors such as family structure and family size. One problem is whether to include parental education as a background or intervening factor, and it is included in different ways in different studies. But probably the most important methodological conclusion is that the analyses really must be conducted separately by both race and sex (or interaction terms used to sort out the different effects). The only study to do this was Marecek. The Mednick-Baker study in effect does so since the sample is all white. Dividing the sample by sex is important in looking at cognitive outcomes, since males' and females' verbal and performance abilities are subject to different influences, and in looking at socioemotional outcomes as well, since behavior disturbances are manifested differently among boys and among girls.

A fifth and final issue is that of defining what the intervening factors such as "prenatal care," "education," and "family structure" really mean. That is, what is it about them that affect children's health, cognitive and socioemotional development?

SUMMARY AND CONCLUSIONS

Although a relationship between an early first birth and the child's health at birth has been found, this appears to be a result of less than adequate prenatal and perinatal care rather than biology, since it appears to disappear in special hospital populations that receive excellent health care. Unfortunately, here again, what prenatal care contributes is not clearly defined. Children of older mothers are consistently less healthy at birth than children of average age mothers. This is likely to be a true biological effect. The few studies that have looked at the health of infants of adolescent and older mothers find few direct effects of age on infant health. One study, however, did find the death rate from accidents within the first year of life was much higher for infants of teenage than older mothers, even controlling for maternal education and family size.

The age of the mother at birth of a child does appear, on average, to affect her child's intelligence scores on standard tests, achievement scores on standard tests, retention in grade, and other parental and teacher evaluations of performance. This appears to hold for both blacks and whites, for children of all ages beyond the infant level, and for both boys and girls. The direct effects, however, are very small in all the studies. This probably explains why studies using large samples (such as the CPP and the HES) do obtain results that are statistically significant while other studies of smaller samples obtain only occasionally significant results (for example, Kinard and Reinherz). The studies appear to be consistent in this regard. However, even in the very large data sets the differences between children of adolescent and older mothers are very small.

The studies are also consistent in suggesting that there may be important indirect effects: through family structure, maternal education and family size. An early birth is associated with a greater probability that the family will be headed by a single parent, that the mother will complete less schooling and that there will be a larger number of children. And these factors have also been shown to have effects on the cognitive development and achievement of the child. Schooling appears to be the most consistently important of these, with family structure a close second, although not all of these have appeared in the same way in all models. More work could be done comparing the relative contributions of these three factors. It is especially important to look more at the contribution of schooling, since it (and family size) is most subject to manipulation. Since there is very little understanding about exactly what schooling contributes to an individual's capabilities, more work is needed to define what it is about the amount of schooling the mother completes that improves the cognitive ability and performance of her children. Differential school completion may simply reflect differential motivation or capabilities, for example.

An important issue is that of identifying the age of the mother at which effects on the child are most severe, for example, among younger teen or older teen mothers. Most studies show that age has effects that are continuous. That is the negative effects on children decrease gradually as mother's age increases; there is no sharp line distinguishing the intelligence or achievement of a child of a 17 versus 18 year old mother, or a child of a 19 year old from that of a 20 year old. Thus it is not possible to draw sharp age of mother distinctions in child outcomes. In fact, one study (Moore et al., 1985) suggests that, if anything, outcomes for children of very youngest mothers may be slightly above those expected. This may be due to the likelihood that the girl's mother participates in the rearing of the child. One studies suggest that such participation improves child outcomes (Mednick and Baker, 1980; Field, 1984).

Effects of mothers' age at first birth on the socio-emotional development of their children have been found, but appear to be very weak. Several studies found that children of adolescent childbearers are at risk of social impairment and mild behavior disorders, particularly undercontrol of behavior. The pattern differs between the sexes, however. One study showed boys more likely to show rebelliousness, aggression or under control of anger while girls showed fearfulness and other "neurotic" behaviors (Marecek, 19879:204.5). Another study (Mednick and Baker, 1980) found just the reverse, with daughters of early childbearers exhibiting greater aggressiveness and impulsivity while sons exhibited withdrawal, fearfulness and feelings of inferiority. As with cognitive outcomes, most effects are indirect, which, according to Mednick and Baker, operate through family structure. That is, children of young mothers experience unstable family situations, which are associated with problem behaviors in their children. Again, what is needed here is an adequate explanation for the effects of family structure on child outcomes.

Only one study shows differences in mothering behaviors between adolescent and older mothers. Finally, there appears to be no consistent relationship between mother's age at first birth and child abuse and neglect net of differential socioeconomic status of the family.

Notes

1 The definition of death at different stages of life as used in this chapter are the following:

Fetal death:	20+ weeks of gestation
Neonatal death:	infant less than 28 days of age
Infant death:	infant 28 days to 1 year old
Perinatal death:	from 28 weeks of gestation through either the first 27 days of life or the first week of life.

2 The U.S. Collaborative Perinatal Project consisted of the complete population or random samples of all patients qualifying for prenatal care in the 12 participating centers during 6 years of intake, 1966-1972. The study is not representative of all prenatal care patients as the particular hospitals selected, primarily teaching hospitals associated with medical schools, tended to be located in predominantly low income inner city areas and attracted low income clientele. As a result, black and low income prenatal care patients are overrepresented in the study. Such patients are at higher risk of poor pregnancy outcomes to begin with. These hospitals may also have attracted (or had referred) more of those clients with potential pregnancy problems.

3 Two groups with different definitions were used because the age of the respondent's parents was obtained in 5 year age categories, rather than by single year of age. This grouping of age restricted the ability of researchers to infer age at first birth. The method described was used to obtain the best approximation of teenage versus older childbearing. For more information see Card (1978).

4 "Socioability" is defined by responses to three items: 1) reaction to school in the first year, 2) ease in making friends (at present), and 3) how much trouble the child was to bring up.

5 Crowding in the home is simply the number of people per room in the house, directly coded.

6 "Cultured" is a subtest of a personality inventory on the Project Talent Data inventory.

7 Mother's contentment is a scale based on the following items: mother's attitude toward child, mother's isolation, family isolation, mother's overall contentment, and mother's acceptance of her situation.

8 Mother's orderliness is a scale based on the following items: 1) dress, 2) grooming, 3) home appearance, and 4) home furnishings.

9 Stability of family is representated by the total number of family constellations since birth of index child, recoded on a five point scale, with a score of 5 including all cases with 5 or more constellations.

CHAPTER 9

THE EFFECTS OF PROGRAMS AND POLICIES ON ADOLESCENT PREGNANCY AND CHILDBEARING

Sandra L. Hofferth

This chapter will explore the effects of a variety of programs and policies on teen sexual activity, contraceptive use, pregnancy and birth. Discussion also will focus on programs and policies concerned with resolving a premarital pregnancy and with the well-being of young mothers and their infants.

Although we often think in terms of developing programs and policies to prevent teen pregnancy or to ameliorate its assumed consequences, we often tend to overlook the potential feedback effects of programs and policies on teen behavior. Programs and policies have specific objectives: programs for pregnant teens and teen mothers are designed to improve outcomes for child and mother; family planning programs are designed to improve contraceptive use. These are considered to be positive or desirable effects. There may be other unintended impacts. By reducing the negative consequences of certain behaviors policy makers may be reducing the disincentives to engage in such behaviors. For example, making family planning services available may lead some teens to initiate sexual activity at an earlier age than otherwise. Increasing the availability of welfare may increase the probability that, once pregnant, a girl will bear and keep her baby rather than have an abortion or relinquish the child for adoption. Providing special programs for pregnant teens and teen mothers may increase the probability of a repeat pregnancy. In this chapter research on both intended and unintended effects of policies will be reviewed.

SEXUAL ACTIVITY

Several types of programs may delay the initiation of sexual activity and prevent pregnancy. Although all are educational programs, each has a slightly different focus, underlying rationale, and methodology. The first type to be considered is designed specifically to delay sexual involvement. Projects currently funded by the Office of Adolescent Pregnancy Programs fall into this category. These programs are primarily educational, but have a specific purpose, which is to delay sexual intercourse. One type of project focuses on helping

young people develop skills to be able to avoid sexual intercourse. Another type of project promotes parent.child communication as a means to delay teen sexual involvement.

A second type of program attempts to prevent early involvement in sexual activity and early pregnancy by making young women aware of career options and life choices other than motherhood. It attempts to raise young women's self-esteem and sense of control over their lives so that such alternatives can become realistic ones. Three programs that fall into this area include Project Choice, the Association of Junior Leagues programs, and the Girls Clubs programs.

A third type, the most common, falls under the heading of sex education or family life education. The major goals of sex education are to promote "rational and informed decision-making about sexuality" and to "increase a student's knowledge of reproduction" (held by 97 percent and 77 percent of school districts respectively). Fewer than half cited a desire to reduce teen pregnancy and only 25 percent cited a goal of reducing teen sexual activity (Sonenstein and Pittman, 1984).

A fourth type is a combination of traditional sex education with some new techniques which focus on training students in problem-solving and decision-making skills as well as assertiveness skills so that they can implement the decisions they make. These decisions may include avoiding sexual involvement, or selecting contraception (Schinke et al., 1981). Such a project may reduce early sexual involvement, but that is not its primary goal.

Promotion of Abstinence

A major project "Postponing Sexual Involvement" underway in Atlanta, Georgia, directed by Marion Howard of Emory University, has as its goal educating adolescents concerning self-discipline and responsibility in human sexuality (Howard, 1984). The program, which is designed to help young people (under age 16) resist pressures to become sexually active before they are ready for such involvement, originally consisted of a series of four workshops for young people and an optional series of workshops for their parents. Each 90 minute session incorporated factual information and participatory activites designed both to increase knowledge and to build a specific set of skills. Session I focussed on social pressure, Session II on peer pressure, and Session III on problem solving. Session IV, conducted three to six months later was designed to reinforce the skills learned. The critical features of this program are 1) a base in developmental theory, 2) a clear value base, 3) skill-building exercises and activities as well as provision of information, 4) use of peer and parent support. The program was first field-tested in Atlanta and Cleveland, after which two curriculum guides and a companion slide-tape presentation were developed. The project is currently being implemented in the Atlanta public schools as a six-week course for all eighth graders. No evaluation data are yet available.

The office of Adolescent Pregnancy Programs is funding a series of 21 projects which have as their goal the prevention of sexual activity among young teens through improved parent-child communication. One such project has as its goal "to enable parents to better communicate their values and attitudes regarding sexual behavior to their children and to help their adolescents develop positive self.concepts and improved decision-making skills to enable them to exercise greater responsibility over their sexual behavior" (Montana State University, Bozeman, MT). Another project will offer a values based Life and Family National Demonstration Project to parents and their adolescents for the purpose of promoting sexual restraint among teenagers (Search Institute, Minneapolis, MN). The majority of these projects have just begun; evaluations are not yet available. However, it is apparent from a review of their evaluation plans that although most will measure parent-child communication and related attitudes and values, few will actually measure the impact of the program on the sexual activity of the teens who participate. Thus a major test of the effectiveness of such programs will not result from this research.

In 1981 and 1982 the State of California tested and then implemented a Family Communication Program in two regions of California, first in the Fresno area and then in the San Francisco Bay Area (Solem and Associates, 1982). The primary goal of the Family Communication Program was to increase the frequency and improve the quality of parent-child communications about sexuality and thereby ultimately to reduce teen pregnancies in California. The immediate objective was for parents of children ages 10 to 17 years old to initiate a verbal communication or increase the number of verbal communications with their children about sexuality. The program made no attempt to mandate the content of those family communications; rather existing community groups were used as vehicles to facilitate and direct such communication. The media campaign used radio and television advertisements, publicity, printed materials and encouragement and publicity for local organizational activities held concurrently with the publicity campaign.

An evaluation of the program was conducted concurrently (Public Response Associates, 1982). This included pre- and post-program public opinion surveys, conducted by telephone. The evaluation showed an increase of 14 percentage points in those parents who "use every opportunity" to teach their children about sex," and a decline of 11 percentage points in the number of parents who say that their children initiated more discussions on sexual topics than they did. There was no overall change in attitudes towards sex education, although a slightly increased proportion thought parents were responsible for their children's sex education. The impact of the program was greater in the Fresno area than in the San Francisco Bay area, probably because the program reached more people in Fresno and because San Francisco area parents were better communicators before the program. Finally, television was shown to be more effective than either newspapers or radio in reaching the public.

Life Options Approach

The intent of Project Choice is to support and help young women explore future careeer options other than young motherhood (Alexander, 1984). It focuses on making at-risk young women more aware of the variety of life choices which are or can be, available to them. The structure of Project Choice is that of an extra-curricular club with voluntary participation. Meetings are held weekly. Activities are directed toward the development of educational, career and general life options, not simply towards contraceptive behavior. Clubs are composed of students who may not yet be sexually active, as well as of students who are sexually active or who may already be parents.

Since these programs are relatively new, few evaluations have been conducted. The evaluation of Project Choice showed no significant impact on any of its stated goals (Alexander, 1984). However, the evaluation of the program was not very rigorously conducted: the control groups were poorly constructed, the nature of the intervention was not clearly delineated, and the outcome measures were abstract. Only a small number of young women participated in this project. Thus it can be concluded that this evaluation could not adequately evaluate the success or failure of this type of intervention.

The Girls Clubs have developed an experimental program that started about March 1, 1985 and will last three years (Quinn, 1985). Eight girls clubs across the United States were selected. Four were assigned to the experimental and four to the control condition. All projects received a baseline (pre-test) and will receive a follow-up (post-test) instrument, but in only the experimental group are the programs being implemented. The program consists of 4 components, each of which will be implemented at each experimental site. Since the Girls Clubs include girls of a wide range of ages, different components will be directed at different age groups. As the girls age, they will move from one component into another. The first two components are directed at 12 to 14 year olds. The first component consists of a parent-child program which is directed toward increasing communication about sexual issues and values. The specific mechanism will be mother-daughter workshops. The second component, consisting of specific interventions with young adolescents, is designed to postpone their sexual involvement. This part is modeled after the Atlanta program directed by Marion Howard. The third and fourth components are directed at older adolescents (ages 15 to 17). The third component consists of a project "Choices" developed by the Santa Barbara Girls Clubs to help girls develop career and educational aspirations. The program approach is designed to engage participants in a set of activities that will challenge them to think about their own futures, in the areas of family life and work outside the home. These activities include conducting interviews, developing family budgets, solving puzzles, writing conclusions for hypothetical life stories, using classified ads to seek housing and employment, caring for a baby, conducting a personal skills inventory, developing a set of personal goals and objectives, and

developing an individualized plan for reaching these goals (Quinn, 1984). A book entitled Choices, a workbook for young women that is based on the course's content and format, has been published. (A comparable book for males has also been developed.) An evaluation of Choices began in 1984 but no results are yet available. The fourth component of the Girls Clubs programs is the "clinic bridge" between educational and clinic services. This is modeled on the comprehensive school-based program developed by the St. Paul, Minnesota, Maternal and Infant Care Project. Educational and clinic services will be offered, perhaps on the club site, to club members.

Traditional Sex Education

Information on sex education in schools comes from two major national studies. According to a 1982 survey of 200 school districts in large US cities conducted by the Urban Institute and jointly administered by the National Association of State Boards of Education, three quarters of school districts offered some sex education (not necessarily a separate course)--in their schools (Sonenstein and Pittman, 1984). A 1977 survey by the National Institute of Education found that only 36 percent of public high schools offered a separate course in family life or sex education (Orr, 1982). Most schools integrate sex education into the material in other courses. These data are consistent with reports from individual adolescents, of whom three quarters report some sex education instruction before leaving school (Zelnik and Kim, 1982).

School districts are remarkably in agreement on the goals of sex education. Ninety four percent agree that a major goal is to promote rational and informed decision-making about sexuality; 77 percent agree that a goal is to increase a student's knowledge of reproduction. 25 percent say that a goal is to reduce teen sexual activity and 21 percent say it is to reduce teenage childbearing. Nine of ten districts include physical differences between males and females, pregnancy and childbirth and sexually transmitted diseases in their curriculum. Three quarters include information on sources of contraceptives and on personal or moral values, while only half include information on masturbation and homosexuality, and almost none include information on sexual techniques (AGI, 1983; Orr, 1982).

Effects of Sex Education

Sex education is designed primarily to enhance knowlege. That is, it is designed to improve students' knowledge and understanding about how the body functions and about human sexuality. Some courses are also designed to understand the social context of sexuality, including relationships with others and the social, moral and ethical constraints on its expression. A successful course should be expected at a minimum to increase knowledge in the areas taught. And this generally is found

to be the case. Numerous studies find the same thing--courses in human sexuality and family life do increase students' knowlege about the subject (Kirby, 1984; Eisen et al., 1985; Finkel and Finkel, 1984).

Sex education may also affect attitudes, but research to date has documented only limited effects. On the one hand sex education appears to make students more tolerant of others' attitudes and behavior; on the other hand it has not been found to alter the individual's personal attitudes and beliefs (Kirby, 1984). However, it is precisely this concern that has led many sex educators to focus more attention on discussion of personal and moral beliefs and values about sex and sexuality, to make sure that students understand the context of their personal beliefs, even if other students have different beliefs and values.

Although receiving sex education has the strongest statistical association with increased knowledge, there is substantially more interest in how sex education affects behavior. In particular, there is concern that sexuality education promotes early or more frequent sexual activity among teens that take such courses. There is also concern that it may not be effective enough in promoting effective and responsible contraceptive use among teens sexually active, in particular, effective enough to counteract the alleged incentive effect on sexual activity. Finally, there is interest in identifying, among those exemplary programs, programs that appear to be most successful, and the characteristics that are associated with these successes. Here, as before, we focus on the effects of these programs on sexual activity, contraceptive use, and premarital pregnancy and pregnancy resolution.

In an analysis of the effects of having had sex education in high school among a national sample of 15 to 19 year old females in 1979, Zelnik and Kim (1982) found no association between the probability of initiating sexual activity and having had sex education; however, for those who were sexually active, those who had had sex education were more likely to contracept and less likely to become pregnant than those who hadn't. This study was based on survey responses, with only a limited set of questions to measure whether the respondent ever took a sex education course, and with no measure of whether the course was taken before or after the behavior examined. However, the authors believe that the lack of information on the ordering of events produces a conservative bias. That is, the results are weaker than they might have been with more appropriate data. Unfortunately, with the data available it is impossible to tell what about the program or programs might have led to this result. Thus the results are useful but not definitive.

There are several fairly recent studies of sex education that are of interest. The Arkansas Family Planning Council (1983) conducted a study of the impact of instituting sex education in about one-third of its schools. It found that births declined at a faster rate from 1978 to 1981 in areas where students received sex education than in areas

where they did not. Unfortunately, a reanalysis of this data by Doug Kirby (personal communication, Februrary 1985) for that office found that after controlling for other factors there was no residual impact of the sex education program. It is likely that initial differences between counties, rather than the sex education program, led to the initial conclusion that the program had been successful.

A three-year study of Family Life Education was conducted in 1979-81 in 12 California School Districts by ETR Associates (Cooper, 1983). The study found that the program was highly effective in increasing students' knowledge and enhancing students' self esteem and decision making skills, in increasing parent-child communication and even in reducing pregnancy rates. Unfortunately, the study did not have a control group. As a result, it is not possible to assess whether or not the control group's knowledge, skills, etc., would have improved and their pregnancy rates declined as well. This is not a trivial concern since the Kirby study (reported below) found that changes over time in the control groups equalled changes in experimental groups.

Mathtech Study

The most recent evaluation of sexuality education programs was conducted by Kirby (1984). The major purpose of this research was to find, develop and evaluate promising approaches to sexuality education" (Kirby, 1984:47). Accordingly, and guided by numerous experts, promising programs were selected and improved, before the evaluation was begun. Kirby focused on 12 exemplary programs in nine sites around the country (some sites have more than one program). Four of these programs were school-based, constituted a separate course, and were at least one semester in length. Five were short programs presented either in the school, in community centers, or other locations which lasted from 5 to 10 hours, either in one day or over several weeks. Three additional programs one a peer education program, a second a parent-child program, and the last a combination education/clinic program in a school setting--were also examined. In all of the non-clinic sites, data were collected prior to the course, immediately after the course ended and then 3.5 months later. Control groups were selected for each program. The changes across each site over time were compared with changes in the control group to determine the effects of each program.

Most programs increased students' knowledge. Classes with younger students learned more than those with older students. Surprisingly, the longer courses did not appear to improve knowlege more than the shorter courses. However, there were a number of important differences between short and long programs, including different lengths of follow-up periods, different control groups, and differences in participants and curricula, that might have resulted in this unexpected result.

Only in three short programs at one site did clarity of values increase. Most programs did not increase clarity of long term goals, clarity of personal sexual values and understanding of personal response to sexual situations.

In general, the programs did not increase liberality or permissiveness of student's attitudes toward premarital sex. In contrast, the attitudes of the control groups did become slightly more liberal.

Programs did not affect attitudes toward the importance of birth control. Atitudes were positive and high in experimental and control groups. Scores of both groups increased.

Few impacts on other attitudes, such as toward gender roles, sexuality in life or the importance of the family were found. There was in some programs an increase in opposition to use of pressure and force in social and sexual relations.

There was little impact on self esteem, little impact on skills in social decision-making, communication, sexual decision-making and communication about birth control. The only program to increase comfort talking about sex, birth control, sexuality with parents, and the frequency of reported conversations about sex, birth control with parents, friends and boyfriends was the parent.child program for young children. There was little impact upon comfort with other social and sexual activities.

Finally, there was no impact of the programs on sexual behavior, contraceptive use (frequency of sex without birth control or effectiveness of birth control), or pregnancies.

Student and parent assessments of the courses and their impacts were generally positive to enthusiastic.

Recent Analyses of National Surveys

Because of the lack of national surveys with information on sex education ever received, in the last five years questions were added to the number of national surveys which included teenagers. Recently, analyses of these new data sources have become available. Questions on whether the respondent ever had a sex education course, as well as information on sex activity and with whom ever talked with about sex were included in the 1981 wave of the National Survey of Children, a survey of children who were 12 to 16 at the time. A subset of teens 15 to 16 were analyzed (Moore et al., 1985). The authors found a significant association for white males and females and for black females, such that those who had received sex education were less likely to report that they had had intercourse, and this association held up when controls for family income, mother's education, the mother's age at first birth, family structure, and community size were included. The

only group the association did not hold for was black males. However, with no information on the timing of either the sex education course or first intercourse in these data, a causal relationship could not be tested.

The National Survey of Family Growth included questions not only on whether the respondent had ever had sex education, but whether the course included instruction on methods of birth control and the age of the respondent when that instruction took place. In addition, the month and year of first intercourse was obtained. This allowed the researcher (Dawson, 1986) to establish the timing of sex education with regards to intercourse for all respondents except those who reported contraceptive education and first intercourse at the same year of age. As a result the researcher tested two models: the first made the extreme assumption that all women receiving formal contraceptive education at age x received that education at the start of that year of age, i.e., at exact age x. Under this assumption all women whose first intercourse occurred during the same year as sex education would have received the sex education first. The second model made the equally extreme assumption that all women receiving formal contraceptive education at age x received that education at the end of that year of age. Under this assumption none of the women would have received sex education before first intercourse. The author found no effect of having received sex education under the latter assumption. Under the first assumption they found one significant effect: 14 year olds who had contraceptive education by exact age x were more likely to initiate sex within the next year. None of the coefficients for the other single-year-of-age groups (15, 16, 17, 18) were significant. These results held controlling for factors such as race, parental education, and religion that are also associated with early initiation of sexual intercourse. The author concludes that no evidence for a causal effect of contraceptive education on first intercourse was found in these data.

However, the author found evidence that having had contraceptive education is associated with contraceptive use at first intercourse. Under both the above assumptions those who had contraceptive education were more likely than those who had not to use a contraceptive method at first intercourse. Those who had ever had contraceptive education were more likely to have ever used contraception. The authors found no evidence for a direct effect of contraceptive education on the probability of a premarital pregnancy.

The third study was conducted on data from the National Longitudinal Survey of Youth, 1984 wave (Marsigilio and Mott, 1986). In that year questions were asked about whether the youth had had a course related to sex education and whether it included information about contraception, the female monthly cycle and so on. In addition it asked the month and year in which the first such course was taken. The survey also obtained the month and year in which the respondent first had sexual intercourse. Thus this survey provides the best

possible information to precisely determine the timing of first intercourse relative to a sex education course. The authors found that females who had a sex education course prior to their 15th and 16th birthdays, respectively, were more likely to have had intercourse during their 15th and 16th years. The coefficients were large and statistically significant, net of a number of other factors also found to be associated with initiation of sexual intercourse, such as race, church attendance, parental education, and birth cohort. The coefficients declined in size and were no longer statistically significant at ages 17 and 18. The authors interpret these results as providing some evidence that sex education can increase the probability of engaging in sexual intercourse at young ages. On the other hand, there may be factors associated with instituting sex education at an early age that are also associated with early sex, such as characteristics of the school or community that are not controlled. If so, then the relationship could be spurious. This is the first rigorously conducted scientific study to suggest that sex education may be associated with increased intercourse, thus it is an important one, but more research should be conducted to test the thesis. Since the data were obtained in a survey instrument, only a very minimal amount of information about the course could be obtained. In particular, there was no information about the length of the course, or any of the other factors that were considered in the Kirby (1984) study of a number of model programs.

These authors (Mott and Marsiglio, 1986) found some evidence that having had a sex education course was associated with a higher likelihood of currently contracepting among 17 and 18 year old women; however, the measure of contraceptive use available in the data is very limited. Finally the authors explored but found no relationship between having had a sex education course and whether had a premarital pregnancy after taking that course. The signs were negative, but the coefficients were not significant.

Assertiveness/Decision-Making Approaches

Schinke and Gilchrist (1984) and Schinke et al. (1981) have been utilizing what they call a Life Skills Counseling approach with adolescents. Its six components include information, problem-solving, self-instruction, coping, communication and support systems. Schinke and colleagues argue that pregnancy prevention requires adolescents to think analytically and rationally about their sexual behavior. To do so they need not only factual information, but also problem-solving and decision-making skills and interpersonal communication skills so as to be able to implement those decisions. Schinke and colleagues have implemented a number of programs utilizing this approach. These programs provide information, but they also train students in problem-solving and decision-making skills as well as assertiveness skills so that they can carry out their decisions. For example, if a youth decides to avoid involvement in sexual activity, he or she will have the

skills to resist pressure to participate. In contrast to the Howard project, the Schinke project takes no explicit value position on behavior. Each individual develops his/her own goals and objectives. The Schinke project also includes contraceptive decision-making and teaches assertiveness in active sexual relationships. The skills emphasized in the course are taught through modeling, role playing and rehearsal.

The Schinke project (1981) has evaluation data for a total of 44 subjects in the experimental condition and 49 controls. Data from the six, nine and 12 month follow-ups show that the youth who took the course had better problem.solving and communication skills, and more knowledge of reproduction and birth control than those who didn't. They also had more favorable attitudes toward family planning, more habitual contraception, greater protection at last intercourse and less reliance on inadequate birth control methods than untrained teens (control group). Unfortunately, no information on sexual activity was reported for these subjects.

Summary

In summary, research conducted on young men and young women has shown that sex education increases knowledge about sexuality; however, the evidence for an impact on behavior is weak. Assertiveness/decision-making approaches along with sex education look promising, but have not yet been adequately evaluated. Life options approaches are new and lack evaluation. Finally, research has shown that special parent-child programs can and do result in increased parent-child communication about sexuality, at least for a short period following the program (see Kirby, 1984:317-350). However, support for the hypothesis that communication reduces teen sexual activity is weak (see Fox, 1980; Newcomer, 1983; Kahn et al., 1984, and discussion in Chapter 1). Unfortunately, a major test of the effectiveness of such programs will not result from the research described above because of weaknesses in the evaluation designs. Male-female differences in responses to these programs have not been explored.

CONTRACEPTION/PREGNANCY PREVENTION

The types of programs that are directed at contraceptive use and pregnancy prevention include the assertiveness/decision-making approach, sex education, family planning services, school-based programs, and non-school based multi-purpose youth centers.

Assertiveness/decision-making approaches were covered in the previous section. Schinke et al. (1981) found a significant program impact on contraceptive use at the six month follow-up. The characteristics of sex education were reviewed in the previous section and won't be reviewed here. As described earlier, according to the most

rigorous evaluation of a small number of sex education programs across the United States, no significant impact of these programs on contraceptive use (e.g., frequency of sex without birth control, effectiveness of birth control used), or on pregnancies in the short term was found. However, three recent studies based on nationally representative samples of young women (Zelnik and Kim, 1982; Dawson, 1986; Mott and Marsiglio, 1986) found that young women who said they had had a sex education course in school also appeared to be more effective contraceptors. The evidence that sex education is associated with better contraceptive use among sexually active teenagers is strong and consistent.

Family Planning Services

Family planning means the provision of information and services relating to birth control primarily to women. In 1981 an estimated 4.6 million women obtained family planning services from organized providers; about one third or 1.5 million were teenagers. Another 1.4 million teenagers visited private physicians. These 2.9 million teens represent about 57 percent of the estimated 5 million teens under age 20 at risk of unintended pregnancy in 1981 (Torres and Forrest, 1983). Of the 2504 different agencies providing services, the majority (56 percent) were health departments, 13 percent were hospitals, 7 percent planned parenthood agencies, and the remaining 24 percent a variety of other types of organizations. Thus family planning services include services provided by private physicians as well as family planning clinics such as those operated by Planned Parenthood and public health departments.

The Relationship between Contraception and Pregnancy

Much research has shown that those women who use contraceptives experience lower rates of pregnancy than those who use no contraceptive method. Typical pregnancy rates for 100 teenage women who start out the year employing a given method range from 2 for a combined birth control pill to 54 for those using no method. Pregnancy rates are consistently lower for contraceptors than non-contraceptors, for consistent users compared with inconsistent users, and for those using medically prescribed methods compared with those using non-medically prescribed methods (except for rhythm).

Given that we know that consistent use of effective methods of contraception is associated with a lower risk of pregnancy, the questions that arise include the following: 1) What contraceptive methods do teens use? 2) Where do teens obtain these methods? and 3) What programs are most effective in promoting the consistent use of effective methods by teenagers?

Methods Teens Use

What methods do teens use? A 1982 study (Forrest and Henshaw, 1983) of the methods used by women (of all marital statuses) who are at risk of unintended pregnancy shows that among those 15-19, 18 percent are using no method. Of those using a method, 53 percent are currently using the pill, 3 percent the IUD, 1 percent the diaphragm, 25 percent the condom, and 18 percent other methods. There were few sterilizations.

Another 1982 study (Bachrach, 1984) shows that of never-married teens 15-19 who currently used a contraceptive method, 62 percent were using the pill, 0.9 percent the IUD, 6.4 percent the diaphragm, 22 percent the condom and 7.8 percent other methods. The results, while not identical, are similar.

Where Do Teens Obtain Contraception?

Where do teens obtain what kind of method? A study by Forrest and Henshaw (1983) shows that medical methods (pill, IUD, diaphragm) are obtained from physicians and clinics, while non-medical methods (condom, spermicides) are obtained from retail stores, with a small proportion obtaining them from clinics.

Both physicians and clinics should be particularly effective in increasing contraceptive use and preventing pregnancy, with retail establishments ranking third. Although we have much less information on physician-obtained contraception than that obtained in clinics, the information we have suggests that individuals do not depend uniquely on one source. For example, one study (HHS, 1978) found that 12 percent of those clients who didn't return to the clinic in 6 months had actually changed providers, with 2 out of 3 of these going to a private physician.

Differences between Physicians and Clinics

There are important differences between physicians and clinics, however, in actual practice. According to the recent Orr study (1984), 92 percent of obstetrician-gynecologists, but only 66 percent of general practitioners and 32 percent of pediatricians would prescribe a contraceptive method for a sexually active unmarried teenager younger than 18 without parental consent. Of those who will prescribe contraceptives for adolescents, 90 percent will prescribe the pill; smaller proportions will prescribe other methods (IUD, diaphragm). Thus, in actual practice young teenagers have less access to medically prescribed contraception through private physicians than clinics.

In addition, there are substantial cost differences between physicians and clinics. Orr (1984) estimated that the average fee

charged by private physicians for an initial family planning visit ranged from $34 for a GP, $35 for a pediatrician to $42 for an OB-GYN, for an average of $37. This does not include the cost of a supply of pills, which ranges from $8.75 to $15.00 per month (Atlanta, 1984) (Conversation with Bob Hatcher) (see Torres and Forrest, 1983, for an average estimate as of 1982 of $8.26 per cycle). In contrast, 1982 clinic fees averaged $9 for patients of all ages, including the 35 percent who received services provided free by the clinic or paid for by Medicaid. The average fee per visit among patients who paid was about $14 (Torres and Forrest, 1983). Women who obtained their prescriptions through a clinic often paid much less than the full cost. Among teenagers, four of ten clinic patients are served without charge or are covered by Medicaid. For those who do pay, the average clinic fee averaged $11 in 1981. Moreover, the younger the client the less likely she is to be served at no charge--from one-third of 18-19 year olds to half of those under age 17 (Torres and Forrest, 1982). The average full cost to a full-paying patient for an initial visit plus three months worth of pills would have averaged about $50 in a family planning clinic in 1981 ($14 for first visit plus $36 for pills) compared with about $76 for a private physician ($40 for first visit plus $36 for pills). Data from Chamie et al. (1982) indicate that the primary reason adolescent clinic clients give for choosing a family planning clinic rather than a private physician for contraceptive care is that the physician is too expensive (65 percent). The second most important reason is that the physician might tell parents (26 percent).

Thus it is not surprising that physicians and clinics have a different clientele. Clinic patients are more likely to be black and to have been younger at first intercourse (Zelnik et al., 1984). Although Zelnik et al. (1984) found that teens who obtained their contraceptive method from a clinic are more likely to become pregnant than those who obtained a method from a private physician, once controls are introduced for race and for age at first use of contraception, source of contraception is not a significant determinant of pregnancy. Rather the pattern of prior contraceptive use, race and SES are the major determinants of pregnancy (Zelnik et al., 1984).

Differences Between Clinic/Physician Patients and Other Women

Besides the differences pointed out above between clinic patients and physician patients in race, SES and age, there is a major difference between teens going to clinics or to private physicians and those who don't (who may, for example, use non-prescription methods from a drugstore). The former are at higher than average risk of unintended pregnancy, because of their greater level of sexual activity. Zabin and Clark (1981) found that 37 percent of the teens who gave a reason for making their first visit to a clinic mentioned having a closer relationship with their partner and 29 percent mentioned that they expected to have sex more often. The data seem to show a higher risk of pregnancy when relationships are changing, for example, in the early

months of experience (Zabin et al., 1979). But frequency of sexual activity is probably still the best measure of risk, and most girls who attend clinics are currently sexually active (Zabin and Clark, 1981).

The Impact of Family Planning Services on Contraceptive Use

It is clear that family planning clinics change their patients' contraceptive behavior. Whereas 32 percent of teenage patients were using the pill before enrollment, 80 percent are using the pill after enrollment (according to 1976 data) (Forrest et al., 1981). The proportion using the IUD more than doubles, while the proportion using condom and rhythm decline dramatically. The proportion using no method is reduced from 50 to 8 percent. Based upon these data Forrest et al. (1981) estimate that the difference in expected number of pregnancies before and after clinc attendance declines by 208-272 per 1,000 patients, from 283-359 per 1,000 to 75-87 per 1,000.

Contraceptive Continuation vs. Clinic Continuation

Clinic continuation is related to, but not identical with, method continuation. Shea et al. (1984) found that 72 percent of the adolescents who did not return in the first three months and 71 percent who did not return in the first six months were inconsistent contraceptors. However, adolescents who made the most revisits, particularly in the first two months, were also likely to be inconsistent contraceptors. Such adolescents were probably having trouble with their method and this may have both discouraged them from using it and brought them in sooner than scheduled for a follow-up visit. The one study (Coughlin, 1978) that followed up a sample of 77 teens who had not attended a clinic for 6 months found that 23 percent (18) were not sexually active, 36 percent (28) had pregnancies, 12 percent (9) had changed providers, 6 percent (5) had moved, 21 percent (16) were still sexually active but using no method or a non-prescription method, and 1 was still using the prescribed method (diaphragm) but had not returned for a checkup. Of those successfully contacted, 44 percent (32) were not at risk of a pregnancy. In summary, clinics satisfy an important need for family services, but they are not the only providers of contraception. New methods are being introduced, some of which are available without a prescription (e.g., the sponge).

The Growth in Family Planning Clinic Programs

The growth in the number of women obtaining services from organized family planning clinic programs has been tremendous: an increase from 860,000 in 1968 to 5 million in 1983. Between 1968 and 1983 the number of provider agencies rose from about 1,400 separate agencies operating 1,800 clinics to 2,500 agencies administering 5,000 clinics (Torres and

Forrest, 1985). The average number of patients served by each agency increased from 600 to more than 2,000 between 1968 and 1983.

The proportion of clinic patients who were younger than 20 rose from 20 percent in 1969 to 32 percent in 1983. Patients 17 years of age or younger accounted for nearly all of the increase; the proportion of these young women served rose from nine percent in 1972 to 15 percent in 1979, declining slightly to 14 percent in 1983. The proportion of 18-19 year olds remained constant at 18 percent from 1969 to 1983. Overall, the number of teen patients utilizing family planning clinics increased six-fold between 1969 and 1983, from 214,000 to 1.5 million (Torres and Forrest, 1985).

During the 1970s teen childbearing rates declined; however, pregnancy rates continued to rise. The major reason for the increase in pregnancy rates was the substantial increase in the number of teens sexually active over the period. Pregnancy rates among those sexually active actually declined over the period. Because of increased abortion, birth rates for all teen women declined.

Thus in the 1970s large numbers of teens were being served by family planning clinics, although coverage varied from county to county, and rates of teen childbearing were declining. Are organized family planning programs responsible for part of this decline? What impact, if any, have organized family planning programs had on teen pregnancy and childbearing?

The Effect of Family Planning Programs on Pregnancy and Birth

A successful family planning program should prevent pregnancies since the use of contraception reduces the odds of pregnancy among teens who have sexual intercourse. The only study to look at the impact of family planning programs on teen pregnancy was conducted by Moore and Caldwell (1977). Moore and Caldwell used data collected in 1971 by Kantner and Zelnik from a national sample of females 15 to 19. Policy and program characteristics of the respondent's state of residence at or just before the time of survey, including availability of family planning and abortion, AFDC benefit levels and acceptance rates, and whether the AFDC program covered an unemployed father were appended to the individual's data record. Moore and Caldwell (1977) found that in 1971, black teens aged 16 to 18 living in areas with the most subsidized family planning services were significantly less likely to become pregnant than their peers. This was not found for other subgroups. According to the authors, black teens are overrepresented among users of subsidized family planning services compared to whites, and thus may be more affected by the availability of such services (Moore and Caldwell, 1977).

No other study has looked at the relationship between family planning and pregnancy. Rather they have looked at birthrates, lacking

individual or local area data on abortions and miscarriages. Since fewer than half of the unintended pregnancies prevented by the family planning program would have shown up as births, birthrates should show less impact from the program than pregnancy rates (Forrest et al., 1981). Abortion and unintended births would be the appropriate target; given lack of information on abortions and unintended births, some researchers have focused on out-of.wedlock births, which are assumed to be unintended.

In an analysis of state out-of-wedlock birth rates in 1974, Moore and Caldwell (1977) found family planning availability associated with a lower out-of-wedlock birth rate among black teens, although no statistically significant effect was found for white teens or older women. In a recent analysis using 1975 state and SMSA data along with the Survey of Income and Education, Moore (1980) was unable to find an impact of family planning availability on birth rates, either all teen rates or out-of-wedlock teen birth rates. The generalizability of this analysis is, however, severely limited by problems in obtaining accurate measures of number of births and birth rates, given the particular data used.

Three other studies have found family planning to be associated with lower birth rates at the state, SMSA, and county levels.

Edward Brann (1979) regressed state level indicators of teen family planning coverage, and a number of other state indicators on state birth rates in 1974 and on change in state birth rates between 1970 and 1974. He found that increased availability of family planning services was associated with a substantial drop in teen fertility between 1970 and 1974, net of race, level of income and education, percent urban, and the abortion ratio.

Field (1981) regressed out-of-wedlock teen birth rates in SMSA's in 1971 on a set of characteristics of SMSA's such as race and age composition, educational attainment and income levels and a set of policy and program characteristics such as AFDC benefit levels, family planning availability, and liberality of abortion laws in 1970. Net of other factors, family planning availability was found to be associated with a lower level of out-of-wedlock teen births in SMSA's.

A study which looked at characteristics of counties or groups of counties (Forrest et al., 1981) found family planning clinic enrollment to be associated with substantially lower white teen birthrates in 1976, net of other factors; and an increase in family planning clinic enrollment between 1970 and 1975 also was strongly associated with a drop in white birth rates between 1970 and 1976. When area differences in adolescent sexual activity were controlled, both white and non-white adolescent birthrates were found to have been reduced between 1970 and 1975 as a result of enrollment by teens in family planning clinics.

This study (Forrest et al., 1981) demonstrates how difficult it is to establish causality using regression analysis and cross-sectional data. In 1970 there was actually found a positive relationship between clinic enrollment and adolescent birthrates. That is, the greater the clinic enrollment, the higher the adolescent birthrates. However, this positive relationship weakened and turned negative over time. That is, it changed to a relationship such that greater clinic enrollments were associated with lower birthrates. The authors conclude that early on clinic sites were more likely to be located in areas that had relatively high birthrates. However, over time the family planning program did lead to lower birthrates (Forrest et al., 1981). The association between greater clinic enrollment and lower birthrates became stronger when statistical techniques were used to control for differences among counties in the level of sexual activity, which could not be directly measured.

In conclusion, the evidence consistently shows an association between family planning programs in local areas and reduced teen childbearing in those areas. The only study that used data characterizing areas such as counties along with individual characteristics and outcomes (Moore and Caldwell, 1977) found an association between the availability of family planning services and a lower incidence of pregnancy among black teens 16-18.

The Impact of Family Planning Clinic Programs on Sexual Activity

It has been said that the introduction of the oral contraceptive in 1960 revolutionized society. It has been credited for everything from loosening of sexual mores to the increased employment of women outside the home. By separating the risk of conception from sex it probably has changed the way generations that grew up with it think about sex and childbearing. It is estimated that during the twenty years after its introduction oral contraceptives have been used by an estimated 150 million women around the world (Ory et al., 1980). However, it is important to distinguish between the general availability of modern contraceptives, such as the pill, from specific places and programs that provide contraceptive services, such as family planning clinics. The pill has been available since the early 1960s. Clinics have grown up to provide needed services, but oral contraceptives have been available since the early 1960s from private physicians. Eliminating all family planning clinics would not eliminate pill use, although it would certainly make it harder to obtain. Clinics are more likely to respond to demand than to create it, although they may satisfy the needs of some groups who would ordinarily not have access to certain contraceptive methods.

Critics of family planning programs have claimed that expenditures on family planning and sex education actually cause higher rates of abortions and births. Kasun (1982) presents data which suggests that California, which greatly increased levels of spending for family plan-

ning and sex education, also had high rates of increase in teen abortion and illegitimacy. Her conclusion is that increases in spending on family planning increase sexual activity and, as a result, increase pregnancies, abortions and births among teenagers. However, she did not control for initial differences between California and the rest of the U.S., nor did she actually conduct a statistical analysis. The Forrest et al. (1981) study showed that there was, in fact, a positive correlation between clinic enrollment in 1970 and adolescent birthrates in the same year. However, this positive relationship weakened and turned negative over time. This trend suggests that early on clinics were more likely to be located in areas that had relatively high birthrates, and that this was the reason for the positive association, rather than clinics causing higher birthrates. Associations do not, of course, show causation. For this reason, evidence of associated changes over time, net of initial differences, is stronger evidence for causal mechanisms. There is no such study of changes in sexual activity over time.

One unintended and offsetting consequence of family planning programs may be that of increasing teen sexual activity. The easy availability of contraception through organized family planning programs may allow teens who would not otherwise engage in sex because of fear of pregnancy to do so or may legitimize early and non-marital sex. And, in fact, the period of greatest increase in teen sexual activity was paralleled by a tremendous growth in organized family planning activities. What evidence is there on this issue? In the only study to examine the impact of the availability of family planning clinic services on the initiation of sexual activity net of other factors that also affect it (age, SES, family structure, urban/rural residence, religiosity, birth cohort), Moore and Caldwell (1977) found no association between family planning availability and the probability of a virgin teen female initiating sexual activity. More research is needed on this issue. However, it seems most likely that the relationship between the two is spurious; both respond to similar societal pressures.

While there is no evidence on the basis of which to accept or reject the hypothesis that the availability of family planning clinics affects the sexual activity of individual women, it may still be the case that the availability of contraception in general has affected all teens. Teens know it is available so they may be less afraid to initiate sexual activity. It would be very hard to sort out the effects of the availability of contraception in general and the accessibility of family planning clinics from other related changes in social climate and mores over the past two decades. In addition, it seems like a rather pointless task. It is unlikely that the trend toward greater availiablity of contraceptives to teens will be reversed; if anything the trend is toward fewer restrictions on their availability to unmarried minors (Bush, 1983).

Factors Affecting Clinic Use and Effectiveness in Serving Teens

Previous research has shown that organized family planning programs are successful in meeting their objectives of reducing unwanted pregnancies and births. However, there is probably substantial variation among clinics in their ability to meet these goals. In addition state laws vary, as does funding for such programs (see, for example, Bush, 1983). A few recent studies have explored the specific aspects of clinics that are associated with greater success. There are two types of outcomes that could be considered successes:

1. Drawing teens into the clinic to begin with and

2. Keeping them--including continuation at the clinic in terms of making and keeping appointments at regular intervals and continuing use of the contraception prescribed or obtaining a substitute if a method is discontinued.

Just because teens do not continue at the same clinic does not necessarily mean they are not contracepting (they may go to a private physician or switch to non-prescription methods, for example. In addition, teens who continue at the clinic are not necessarily contracepting effectively and continuously. Nor are teens who have never attended a clinic necessarily failing to contracept.

The most recent study to look at what factors draw teens into clinics is the Kisker (1984) study. This study is based on AGI's survey of family planning clinic directors, patients, pharmacies, and private physicians in 1981. The family planning clinic is the unit of analysis. The indicator of effectiveness in drawing teens is the mean delay among teenage clinic patients between first intercourse and first clinic visit. Planned Parenthood clinics, medium size clinics (1,000 to 2,500 clients) and non-metropolitan clinics have the lowest mean delay. Using multiple regression, a number of factors were identified as important determinants of mean delay. These are related to outreach and community relations, the convenience of attending the clinic, and the clinic's competition in providing contraceptive services. Clinics that offer a community education program for teens, obtain support of local church groups, develop active relationships with local youth groups, are open in the evening and on weekends, accept walk-in clients, are conveniently located, require less educator/counselor time per patient, and provide fewer services have less of a delay between first intercourse and first visit. Mean delay is increased if pharmacies in the community make non-prescription contraceptives easier to obtain. The more private physicians there are who provide family planning services to teens does not appear to affect mean delay in attending clinics; however, the more they charge the shorter the delay in attending a clinic. Finally mean delay is shorter in more prosperous areas where mean levels of schooling are higher, and where levels of teen pregnancy are lower.

Several studies have explored factors associated with clinic continuation. The Kisker (1984) study used clinic directors' estimates of the number of the clinic's teen patients who were continuing patients in 1980. AGI then calculated the percentage of continuing patients in 1980 adjusted for growth or decline in the total number of teenage patients served annually and for aging into the adult patient group. Medium size and non-metropolitan clinics had a better record of clinic retention by this measure. Clinics with an active relationship with local youth groups, who had evening and weekend hours, who provided more services and who required less educator/counselor time retained more clients. In addition, clinics in higher socioeconomic status areas and in areas with fewer nonwhites retained more clients.

Nathanson and Becker (1984) studied clients and the professional staff of 78 Maryland county health department family planning clinics. In a study using clinics as the unit of analysis, contraceptive use was measured as the proportion of time subsequent to the baseline interview that women at risk of pregnancy were using a medical method of contraception. To obtain clinic estimates, these individual measures were then aggregated over all clients for each clinic. The predictor variables measured quality of interactions between clients and staff. It was assumed that other organizational and provider characteristics operate through their effects on interaction quality. There were four critical interaction dimensions, measured from the perspective of staff expectations, client expectations, and client's report of what actually happened. These four dimensions were:

1. the relative amount of control or direction exercised by clients as compared with practitioners;

2. the scope of interaction (range of concerns about client);

3. the level of trust placed by client in practitioner; and

4. the "warmth" of the relationship.

The warmth of the relationship appeared to be irrelevant to clients' contraceptive use. However, the other factors were important. "Under circumstances where clients expect, and staff employ, authoritative guidance[1] in helping the clients to select a contraceptive method, mean levels of contraceptive use are substantially increased" (Nathanson and Becker, 1984:1). Although in earlier analyses important correlates of contraceptive use were clinic size, time spent with clients, and age of clients, these variables were no longer significant once the four dimensions of client-staff interaction were included. Clinic hours also had no net impact on contraceptive use. These results are consistent with studies of compliance with medical regimens which uniformly report authoritativeness to be associated with higher levels of compliance. Nathanson concludes that the approach taken by most clinics, which place a heavy emphasis on independent client decision-making, is less conducive to effective contraceptive use than a more authoritative "medical" approach.

The effect of scope of interaction differs depending on whether the preference is that of nurse or client. Clients' belief that the scope should be broad, including learning about clients' personal problems, is associated with greater contraceptive use in the clinic; however, contraceptive use is lower in clinics in which nurses want to talk about the clients' personal problems. The authors interpret this as suggesting that medical personnel undermine their authority by becoming too friendly.

Finally, both indicators of client trust--in confidentiality of the visit and in the advice given--were found to be associated with lower mean clinic contraceptive use. The authors suggest that, consistent with findings from other studies, healthy skepticism may be related to better compliance with a medical regime.

A third study (Shea et al., 1984) explored the relationship between clinic use and contraceptive use among adolescents. Adolescents making their first visits to one of nine federally funded family planning clinics in the Philadelphia area were interviewed during their initial clinic visit and followed-up by telephone six and 15 months later. Data on contraceptive behavior and clinic attendance were obtained from 359 sexually active adolescents age 13 to 17. Consistent contraceptors were those who had used a reliable method of contraception (i.e., pill, IUD, diaphragm, foam, and condoms) during all periods of sexual activity, with the exception of the month in which the clinic visit occurred. Inconsistent contraceptors included those adolescents who used a reliable method most of the time, but not continously, as well as those adolescents who primarily relied on the least effective methods or no method at all. There is a close relationship between contraceptive behavior and clinic use. Almost three quarters of the adolescents who did not return in the first three and six months were inconsistent contraceptive users. However, adolescents who made the most revisits in the first two months were also likely to be inconsistent contraceptive users. Almost three-quarters of teens who made 3 or more visits to the clinic in the first three months were inconsistent users. It appears that those who return most are probably having problems with the method, and that is associated with inconsistent use. A revisit within the second or third month is important since most adolescents received an initial 3 month supply of oral contraceptives, and, therefore, would need to renew the prescription or pick up another three month supply.

The researchers also looked at factors related to clinic use, as measured by 1) the probability of making a revisit, 2) the total number of clinic visits, 3) the timing of the first months. Of all these variables, the only consistently significant factor was the adolescent's satisfaction with her contraceptive method.

Organized family planning programs have been in existence for quite a while and a considerable amount of research and evaluation has been conducted on them. Several specialized programs specifically designed

to serve teens have developed recently as offshoots of hospital or clinic based family planning programs. These are programs based either in schools or in multi-purpose youth centers. They differ from clinics in that they offer more services and are directed at youth populations.

Family Planning Clinic Based Programs for Males

Fewer than half of one percent of all family planning clinic patients in the United States are male (Dryfoos, 1985). Reasons for the low rate of male utilizaton include lack of funding, negative staff attitudes toward males, lack of male staff or difficulty integrating male staff into the program, and the general perception of clinics as "woman oriented," which result in difficulty recruiting males directly (Dryfoos, 1985). However, males often attend clinics with their partners, attend counseling sessions and receive educational publications. The fact that males who do so attend are probably very different from those who do not make evaluation of the impact of the programs directed twoard males in such settings difficult. Programs that reach males in locations such as community centers, recreation areas, schools and even the street have used films, workshops and the media to attempt to improve their awareness of and use of contraception. No evaluation of the success of such efforts has been made (Dryfoos, 1985).

Condom Distribution Program for Males

While the distribution of condoms may be part of family planning services offered in clinics, several innovative programs have aimed specifically at distributing condoms and encouraging their use among teenage males (Dryfoos, 1985). In one early program (Arnold, 1973), small neighborhood stores and shops distributed free condoms to adolescent males. An increase in condom use over the 13 week period of the study and in the six months following the study was reported (Arnold 1972). Contact one year after the study found that 69 to 81 percent of the respondents had used a condom at last intercourse. Other programs have developed similar condom distribution activities; however, few have been rigorously evaluated. Dryfoos (1985) recommends that further review and evaluation of such programs be undertaken in light of early indications of success of such programs, the clear advantages of condom use for reducing pregnancy and preventing the spread of disease, and the low cost and risk of the condom.

Parenthood Programs for Males

Dryfoos (1985) reviewed several small scale intervention studies aimed at increasing the involvement of older fathers with their children. Parke and Neville (in this volume) suggests both that many adolescent unwed fathers are interested in their infants and children and that involvement by the father can yield positive effects for them.

Recently interest has grown in developing programs targeted to adolescent fathers (see, for example, Dryfoos, 1985). There are at least three concerns that need to be addressed before major commitments to this approach are made. First, rigorous evaluation of such programs must be undertaken. Unfortunately, evaluating such programs is made very difficult by the fact that fathers who participate are a select groups of fathers; they have stayed in touch with the mother and child. The programs are likely to be successful for that reason alone. A second and serious concern is that involvement of the father may not always be to the best interest of the mother and the child. This would be the case if the father were abusive and non-supportive of the mother. In addition, contact with the natural father may prevent the mother from making contacts with another male who might serve as a more supportive father to her children. While it is true that parenting education would be useful for all males to have, maintaining ties (other than economic ones) with their natural children and their mothers may not always be helpful for all parties involved. The model of the importance of the father has been developed from the married couple family. Research suggests that other supportive family members such as the grandmother of the child or other relatives may serve equally well as substitutes for an absent father (Kellam et al., 1979) and contribute to the well-being of the child. Third, and finally, what the content of such programs should be has not been established (see the section on approaches, below).

Where there is a clear commitment to actively participate in the rearing of a child of an adolescent mother, this participation could be made more effective (Dryfoos, 1985) by making sure that fathers learn and practice basic caretaking skills and by establishing regular supervised contact with their infants. Various types of interventions during the postpartum period are reviewed in Dryfoos, 1985, and Parke, in this volume). Most of these interventions were conducted on older fathers, not adolescents. So the extent to which they would apply to younger men is not known. A major program which attempts to intervene with adolescent fathers is the Teen Father Collaboration Project, discussed in the section on economic approaches below.

School-Based Programs for Young Men and Women

Although teenagers will attend adult clinics, several studies have found common features of clinics that attract and keep teen clients. In particular, availability, confidentiality, affordability and location apear to most influence attendance (URSA, 1976; Coughlin, 1978; Zabin and Clark, 1983; Kisker, 1984). Location on site in a school would appear to satisfy many of these criteria. Clinic and contraceptive continuation are facilitated by ease of return visit. Follow.up is facilitated by provider accessibility to school schedules. Confidentiality is increased by providing a number of non-family planning services such as athletic, job and college physicals, immunizations and a weight control program. Males can be attracted and served as well as

females. Finally, the services are generally provided free of charge to registered students.

The oldest and most successful ongoing project is the St. Paul Maternal and Infant Care (MIC) Project, which first opened a comprehensive heath care clinic in a local junior/senior high school in 1973. Since then it has expanded to four senior high schools and as of 1983-84 served some 70 percent of the student population. About one-third of the students served use the clinic for family planning. Services provided include educational counseling and family planning services, prenatal and post-partum care, nutrition education, day care, and parenting, family life and sexuality education.

Data from the St. Paul project show that the fertility rate in the schools with clinics dropped substantially over the period: from 59 per 1,000 in the 1976-77 school year to a low of 21 per 1,000 in 1979-80. The rates increased in 1980 to 39 per 1,000, due to an increase in the refugee pouplation in St. Paul. Rates were down again, to 26 per 1,000, in 1983-84. These figures compare favorably with national birth statistics, which showed a birth rate of 45 per 1,000 for whites in 1977 and in 1982. No information is available from the St. Paul Project on the trend in pregnancies and abortions, so we don't know how much of the decline is due to a decline in pregnancies and how much to an increase in abortions.

Doug Kirby (1984) is just beginning a project which will evaluate the effectiveness of comprehensive school based programs in preventing adolescent pregnancy in 9 to 11 sites around the country. Potential project sites, listed in Table 1, meet the following criteria for being included in the study: they are multi-service, provide family planning, are located on the school campus, have or will have a good working program, have a willingness and enthusiasm to participate, have the ability to collect good data, and reflect variation in features. Three are just opening so in these there will be an opportunity to have a true pretest-posttest design. The evaluation designs vary from project to project, but the major strategy is to administer questionnaires in both program and matched non-program schools at two points in time. The study will not be longitudinal (except for a very small case-study sample). Rather it will be based on a series of cross sectional surveys of all students in the study and comparison schools. Since no names will have to be recorded for follow-up, confidentiality can be assured.

Comprehensive Non-School Based Prevention

There are several programs that provide family planning and other services to male and female teenagers, but that are not located in school settings. These are primarily located in youth centers. However, they can be included as pregnancy prevention programs because of a strong family planning component. Two familiar names include The

Door (New York City) and The Bridge (Boston). A third, recent addition, is the "Self.Center," located in Baltimore, Maryland. The latter falls somewhat between school and non-school based programs. The center is actually located across the street from the school; however, clinic personnel do work in the school and refer individuals to the freestanding clinic. A fourth, the West Dallas Youth Clinic, is also located adjacent to a high school.

The Door is a comprehensive multi-service center for youth 12 to 21 located in Manhattan. It provides free medical and gynecological services, family planning and sex counseling services, nutrition counseling, psychiatric counseling and therapy and social services. It also provides crisis intervention services, education, vocational and legal counseling services. It has a learning center and a gymnasium with locker rooms and showers. It offers creative workshops in arts, crafts, poetry, music, dance and theater (from Philliber et al., 1983). No systematic evaluation has been conducted of the family planning services component of the Door, although one is planned (Nowlan, private communication, 1985; see also Fink, Kosecoff and Roth, 1983).

The Bridge is a multi-service center for youth located in Boston, in the heart of the Boston tenderloin district. Services provided include counseling, medical care, family planning, STD, employment counseling and placement and, for teen mothers, child care and parenting training. Particular attention is paid to assisting youngsters to attain high school equivalency degrees (Dryfoos, October 1983).

In conjunction with the Johns Hopkins University Adolescent Pregnancy prevention program, a cooperative arrangement was made among a junior high school, a senior high school and a nearby free-standing clinic (the Self-Center) (Zabin et al., 1986). Nurse practitioners and social workers were stationed in the schools during the day to provide sex and family life education and counseling and referral for the students. They also worked at the clinic to which the students were referred for birth control.

An evaluation of this program conducted by Zabin et al. (1986) demonstrated substantial program impacts. Over the course of the 2-1/2 years that the program was in operation, substantial increases in sexual and contraceptive knowledge were shown among teenagers in program schools, compared to teenagers in non-program schools. The authors attribute this to the increased accessibility of the staff and clinic. Some delay in the initiation of first intercourse occurred in program compared with non-program schools, delay substantial enough to lay to rest fears that access to contraceptive services in schools would increase levels of sexual activity, and to suggest that such programs may, in fact, delay first intercourse. One of the most important findings was that students in program schools attended clinics sooner after initiating sexual activity than prior to the program and in comparison with non-program schools. Junior high school students used the clinics at levels comparable to those of older teenagers, and, sur-

prisingly, junior high teenage males used the clinics as frequently as girls of the same age. In contrast, senior high boys were much less frequent clinic users than seior high girls. Thus suggests that junior high boys are more recepitve than seenior high boys to such programs; getting them early may improve later male contraceptive practice. There was also evidence of improved contraceptive practice among both males and females in program compared to non-program schools. Finally, each measure used showed a reduction in pregnancy rates among older teenagers and a delay in the rapid increase in pregnancy rates or a decline in pregnancy rates among younger teenagers in program compared to non-program schools. The study suggests greater effects for younger than older teenagers, and suggests that the program works by encouraging younger teenagers to develop patterns of knowledge and behavior usually associated with older adolescents, coupled with delaying first intercourse by about 7 months.

The West Dallas Youth Clinic (WDYC) of the Children and Youth project of the University of Texas Health Service Center at Dallas is located in a building adjacent to the area's only high school. Family planning and other medical services are provided to male and female adolescents 5 days a week from 9 a.m. to 4 p.m. as part of a comprehensive adolescent health care service. An evaluation was recently conducted to determine the effect of the program on the teen birth rate (Ralph and Edgington, 1983). An area of Dallas similar in characteristics to West Dallas was selected and birth rates were compared for the period 1971-74, when the program began, and for the period 1975-78. A second comparison was made between birthrates of WDYC registrants and non-WDYC registrants in 1977. Results show the birth rate to have decreased faster between 1975 and 1978 in West Dallas than in the matched area. In addition, the birth rates in 1977 were lower among WDYC participants than among non-participants. The authors concluded that the clinic program did reduce teen births in West Dallas.

Parental Notification

In February 1982 the Department of Health and Human Services proposed to require family planning projects funded by Title X to notify both parents or the legal guardian of patients under the age of 18 within 10 days after the adolescent receives prescription drugs or devices from a clinic (Kenney et al., 1982). Drugs for the treatment of veneral disease were specifically exempted. The department also proposed to eliminate current rules that required eligibility for services to be determined based on the minor's own income. In that year (1982) there was only one state that had a law already on the books requiring parental notification before contraceptives could be provided to anyone under age 18. Thus the passage of such a regulation would have indeed dramatically changed the way family planning services are provided in the United States. Even though non-Title X funded services could still be provided confidentially it was expected that other programs would probably also follow suit. The question that was hotly

debated was the impact of parental notification on adolescents and their families and on birthrates. After a lengthy debate, the regulation went to the courts, where it was stopped and never implemented. However, the debate is not yet settled. Four issues will be discussed here. First, what are current practices among clinics and other providers regarding the provision of contraception to teens under 18. Second, what proportion of parents already know about their teens' attendance at clinics, and what is the relationship between notification and family involvement? Third, what effect does communication with parents about contraception or sexual activity have on children's behavior, and under what circumstances? Fourth, what effect does fear of parental knowledge about their sexual behavior have on children's use of contraception and attendance at clinics? What effect would a parental notification rule have on attendance at family planning clinics and on contraceptive use?

Provider Policies

In 1978 AGI conducted a survey of family planning agencies, hospitals and freestanding clinics to find out about current clinic policies and practices regarding parental consent or notification for the provision of abortion and medical contraceptive services to teenagers (Torres et al., 1980). Twenty percent of family planning agencies do not provide medical contraceptive services to patients aged 15 or younger without parental consent or notification; 10 percent have such requirements for all patients under age 18. About 25 percent of hospitals, but only 3 percent of Planned Parenthood affiliates report such restrictions for those under 15; the comparable figures are 19 and 1 percent respectively for those under 18. Of those with restrictive policies, about half require patients to bring a parent or parent's written permission to the clinic with them. The majority will waive these requirements under certain circumstances other than legal emancipation or court order.

AGI also conducted a survey in 37 counties of all physicians in practice of general, obstetric-gynecologic and pediatric medicine of their policies regarding age, parental consent and prescription of contraceptive methods to adolescents in 1981 (Orr, 1984). They found that although 86 percent are willing to prescribe contraceptive methods to adolescent women, only 59 percent are willing to serve unmarried minors without parental consent. Of the types of physicians, ob.gyns are more likely and pediatricians least likely to prescribe contraceptives. Their policies are related to state laws; as expected, physicians are more liberal in states with liberal policies. Thus it can be said that parental notification or consent is curently required by a small minority of institutions before contraception can be provided to unmarried minors, but by 2 out of 5 physicians.

Parental Knowledge about Teen Sexual/Contraceptive Behavior

AGI also surveyed over 1,200 family planning patients unmarried and under age 18 in 1978 (Torres et al., 1980). Of those, 54 percent say that their parents know about clinic attendance; in the majority of cases (30 percent) they told their parents voluntarily. In 21 percent the parents suggested the visit. In only 3 percent did the parents find out from others, including from the clinic. The younger the patient, the more likely the parents are to know.

What is the relationship between parental notification and family or parental involvement in family planning programs? Just because clinics do not notify parents does not mean that they discourage or prevent family involvement. A study of Title XX grantees conducted by the Family Planning Council of Southeast Pennsylvania in 1981 (Furstenberg et al., 1982) found that 85 percent of these programs involve parents directly through counseling, advisory groups, discussion groups, and training workshops for parents. The analysts found that agencies that encourage parental notification (e.g., Planned Parenthood programs) are significantly more likely to operate multiple services for parents (57 percent) than either those agencies that require notification (e.g., hospitals) or those that take no position (e.g., health departments) (44 percent). The authors conclude that agencies that encourage notification involve parents more than those that require it or those neither requiring nor encouraging it; agencies that mandate it may consider it a substitute for other activities toward that goal or it may simply be a bureaucratic requirement with no relationship to the goal of improving family communication (Furstenberg et al., 1982).

Family Communication and Teen Sex and Contraception

The last issue is that of the relationship between family communication and teen sex and contraceptive use. There is no consistent research evidence that daughters' communication with parents leads to postponing sexual initiation, net of other factors. It has been hypothesized that that increased communication about sexual issues often follows debut. Nor is there much evidence that daughters' communication with parents leads to better contraceptive use; again, contraceptive use may lead to increased communication about sexual and contraceptive issues (Fox, 1980; Furstenberg et al., 1984; Newcomer, 1983; Newcomer and Udry, 1983) (see also Chapters 1 and 2). Presumably it is not communication per se that matters, but the closeness of the relationship and the content of the communication (see, for example, Fox, 1980; Newcomer, 1983). A recent study (Kahn et al., 1984) found no association between several measures of parent-child communication and sexual activity of daughters, but an association for sons. For sons, greater communication with mothers was associated with less sexual activity. In contrast, greater communication with fathers was associated with greater sexual activity. Mothers and fathers may communicate different messages to their sons. Daughters rarely communicated with their fathers on sexual matters (Kahn et al., 1984).

Impact of Notification on Teen Behavior

In one study (as reported by Kenney et al., 1980), respondents were asked a hypothetical question about their behavior if parental notification were mandated. Of the 41 percent whose parents didn't know, 56 percent said they would not attend if parental notification were required by the clinic. Of these, 65 percent would use a non-prescription contraceptive, 17 percent would use no method, 9 percent would not have sex, and 9 percent didn't know what they would do. AGI estimated in 1982 that an additional 33,000 adolescents age 17 or younger would become pregnant if the proposed regulation were adopted (Kenney et al., 1980). Of course, what the actual behavior of adolescents would be is unknown.

In conclusion, parental involvement in and knowledge about children's contraceptive behavior may be a worthy goal; however, at the present time the evidence that it will reduce the sexual activity of their adolescent children or improve their contraceptive behavior is weak or non-existent. Certainly there is no evidence that communication would be furthered through requiring parental notification for family planning services. In fact, there is some evidence that organizations that are not required to notify parents, but that encourage parental involvement are more successful in involving parents. The relationship between parental involvement in family planning agency activities and clinic use by their own children is unknown. The evidence suggests that although most parents already know about their teens' attendance at clinics, that there is a group of teens who would not attend clinics if parents had to be notified and that will continue to have sex but will use less effective or no method of contraception. Only a small proportion of sexually active teens (two percent) say they would not have sex if parents were notified of clinic attendance. On the other hand there is some evidence that by the time they have reached adolescence, parent-child interaction patterns are already well-established. It may be too late to change them radically. Research in sex education, in parent-child communication programs and other areas suggests that improving communication prior to adolescence may be a more successful strategy (see earlier discussion).

Summary

Family planning programs have been evaluated and shown to be very successful in improving contraceptive use, and therefore preventing pregnancies and births to teen women. Several recent types of programs, schoos based and non-school based clinic programs that are directed toward male and female teenagers, have shown remarkable successes. Evaluations are still being conducted, but such efforts appear to be consistently successful in reducing births to young women and keeping them in school. Their success among young men has not generally been evaluated.

A large proportion of family planning programs do attempt to involve parents in their activities. The effect of a mandated program to notify parents or require their consent for minors to receive family planning services is unknown, although a number of studies suggest that it would reduce contraceptive use while not changing patterns of sexual activity among teens.

PREGNANCY AND PREGNANCY RESOLUTION

Several types of programs are designed specifically for pregnant teenage women. These include nutritional programs such as WIC, Maternal/Child Health programs with emphasis on prenatal care, and public school programs for pregnant adolescents. Finally, there are several programs that are directed at resolving a pregnancy: abortion and adoption. The programs discussed in this section end at birth or shortly thereafter. There is overlap with programs discussed in the following section, but in general I have tried to distinguish those that end at birth or shortly thereafter from those that continue for some time following the birth.

Abortion Services

The U.S. abortion rate remained essentially stable in 1981-84, after rising each year between 1973 and 1980, and the same was true for the rate for teenagers. In spite of the apparent widespread use of abortion, especially by teenagers, about 40 percent of all teenage pregnancies ended in abortion, compared to 26 percent of pregnancies for women of all reproductive ages, there are apparently still wide gaps in the geographic availability of abortion services. The 2,900 providers in 1982 were located in only 22 percent of all U.S. counties (Henshaw et al., 1984). Thus 78 percent of all U.S. counties had no identified provider of abortion services in 1982. Abortion providers are concentrated in urban areas. Only 2 percent of abortions were performed in nonmetropolitan counties although 26 percent of women of reproductive age live in such counties. Abortion services are most available in states on the East and West coasts. In 1982, 82 percent of abortions were performed in nonhospital facilities: 56 percent in clinics which specialize in abortion services, 21 percent in other clinics and 5 percent in physicians' offices. In 1983, women paid an average of $200 for a nonhospital abortion.

Other factors affect access to abortion services: for example, only a few states and the District of Columbia provide public funding through Medicaid for eligible women, and only 78 percent of health maintenance organizations cover abortion. Although the great majority of women (91 percent) in 1980 who terminate their pregnancies do so within 12 weeks, teenagers are more likely to delay the decision to abort. Only 32 percent of facilities provide abortion after 12 weeks gestation. Finally, some hospitals limit the circumstances of abortion to medical reasons.

Effects of Abortion Availability and Use

The evidence consistently shows that in the U.S. higher abortion rates in an area, whether a state or county, are associated with lower fertility (Forrest et al., 1980; Field, 1981; Brann, 1979; Moore and Caldwell, 1977). This is the case whether abortion availability is measured by liberality of state abortion laws, by abortion rate, or by abortion ratio. Abortion is also associated with total as well as out-of-wedlock fertility. The only study that does not find a negative association (Moore, 1980) finds no association. The relationship between Medicaid policies on abortion in the state and teen fertility was also found to be only weak or non-existent. This is not surprising, since it appears that the majority of women denied publicly funded abortions are able to obtain them anyway (Trussell et al., 1980).

Abortion didn't start in 1973, when it first became legal nationwide in the United States. Although greater availability of abortion services does not cause abortion, which has been around for a long time; it has resulted in its increased use. Between 1973, when legalized in the United States, and 1982, the most recent year for which data are available, the estimated proportion of teen pregnancies terminated by induced abortion has increased by almost two-thirds. Recently there has been a leveling off of the availability of abortion and greater stability in rates and ratios as well.

Abortion rates reflect underlying pregnancy rates. The higher the pregnancy rates, the higher the abortion rates. Thus, for example, comparing blacks and whites, the abortion rate for blacks is higher than that for whites, reflecting the higher pregnancy rate among blacks than whites. In the international study conducted by AGI (Jones et al., 1985), abortion data were available in 11 to 13 countries. In these countries a higher abortion rate was associated with a higher birth rate, reflecting, presumably, a higher pregnancy rate, and a somewhat stable ratio of abortions to pregnancies. In the U.S., the rate of abortions is higher for blacks than for whites, reflecting a greater pregnancy rate, but the ratio of abortions to pregnancies is somewhat lower among black teens than among white teens, while it is higher among black older women than among white older women. This reflects the differential use of abortion among blacks and whites. Black women use it more to terminate childbearing, while whites use it to postpone childbearing. It is possible to have low fertility rates and low abortion rates as well, as in most of the Western European nations (Jones et al., 1985).

It has been argued that the availability of abortion may make women more careless contraceptors, since they know they can always resort to an abortion. However, research by Moore and Caldwell (1977) using the Kantner-Zelnik data from 1971 with added state level variables, found no evidence for an impact of abortion availability on the probability of pregnancy. Nor did they find any evidence of abortion availability on the transition to sexual activity. They did, however,

find that abortion availability increases the chance of a premaritally pregnant teen having an abortion, and decreases her chances of bearing an out-of-wedlock child. Thus this analysis suggests that the availability of abortion affects the probability that an unmarried woman will chose to have an abortion rather than having an out-of-wedlock birth or marrying once a woman is pregnant. It does not appear to affect sexual activity or the probability of becoming pregnant. In fact, a recent study suggests that in 1979 the probability that a young women who aborted a previous first pregnancy will become premaritally pregnant again within 24 months was substantially lower than that of a comparable woman who carried th.e first pregnancy to term (Koenig and Zelnik, 1982). These data suggest better contraceptive practice among those who had a prior abortion than those who didn't. There is a paucity of data and analysis of this important question, however.

Parental Involvement in Teenage Decision Making Re Unwanted Pregnancy Resolution

In spite of the fact that legalization of abortion in 1973 meant that a pregnant minor could get an abortion without telling her parents, a study (Rosen, 1980) based on data collected in 1974-75 suggested that teenagers do involve parents in pregnancy resolution decision-making. Few adolescents consulted their parents when they first thought they might be pregnant, but more than half involved their parents in decision-making to resolve the pregnancy.

The mother's influence was strongest for those whites who aborted and those who gave birth but gave the baby up for adoption and was strong for all black women. Maternal influence was least for white girls who kept the baby. Many of these young women were not living at home, and some lived with a male partner.

Adoption Services

There is very little information available on providers of adoption services, either the nature of the institutions or their development. Apparently the origin of adoption services is attributed to religious groups of the late 19th century, which were supplanted by by social welfare organizations in the early 20th century (Muraskin, 1983). Most care was apparently provided by voluntary non-profit organizations that both cared for pregnant young women and screened/evaluated prospective adoptive parents. After the mid 1950s, however, the relative importance of adoption oriented residential and non-residential facilities declined and care alternatives for young women pregnant out of wedlock and who will keep and raise their children have increased (Muraskin, 1983).

One example of a private adoption agency is The Children's Home Society of Minnesota which operates a residential program for approxi-

mately 300 pregnant adolescents per year. Of these about 10 percent release their babies for adoption. According to the data presented by Jane Bose, there were 6,107 births to teens in 1982 in Minnesota and only 45 newborn adoptions in Minnesota in 1983 and 60 in 1984. It is clear from these data and the stories of researchers attempting to study adoption as an alternative resolution to an unplanned teen pregnancy that it is infrequent.

In recent years, some reversal of emphasis has occurred and the Office of Adolescent Pregnancy Programs (OAPP) has been charged with finding ways of making adoption a more attractive alternative for adolescents pregnant out of wedlock. According to Muraskin (1983) this is both a new role for a federal agency and a difficult one, coming at a time when few adolescent mothers choose to terminate parental rights.

In line with its new mandate, the Office of Adolescent Pregnancy Programs has funded several programs whose purpose is to increase the proportion of pregnant teens who opt for adoption over abortion or childbearing. OAPP is also funding two ongoing studies (Kallen, 1984; Resnick, 1984) which will, in the future, provide some information on the factors affecting the adoption decision. The results of previous studies of this process are discussed in Chapter 4.

Title IX of the Education Amendments of 1972

One regulation which has had a substantial impact on teens is Title IX of the Education Amendments of 1972. This law prohibits discrimination in education against teens because of their pregnancy/childbearing/marital status. Teens cannot be expelled from school or barred from any program, course or extracurricular activity because of pregnancy, parenthood, or marriage. Schools can institute special programs, but they must be voluntary and comparable to regular programs (Zellman, 1982). Of course, this rule only applies to schools receiving federal funds; private schools are not covered and may still bar pregnant teens from classes.

Although no one has attempted to test an association, recent data do show that in the late 1970s and early 1980s teens who bore children were much less likely to leave school than they were in the late 1960s and early 1970s (Mott and Maxwell, 1981). This suggests that more liberal policies regarding school attendance (and the establishment of special school programs) may have made some difference. On the other hand, liberal policies reflect the more liberal climate regarding out-of-wedlock childbearing in general. However, the Education Amendments of 1972 were an early and a landmark step in equalizing opportunity between the two sexes, a step whose consequences are only now beginning to be recognized.

Public School Programs for Pregnant Teenage Women

In her review of 12 school sponsored programs in 11 school districts in 7 states, Zellman identified three types of programs schools have developed in response to the problem of teen pregnancy. The first type is all-inclusive and consists of an intensive curriculum. Pregnant teens are separated from regular classes and offered an educational curriculum supplemented by classes in parenting and child development. Other services such as health monitoring and child care may be offered. However, the common features are that students enrolled in such a program do not attend regular classes, are physically separated from regular school, and must return to regular classes within a few weeks after birth. The second type consists of a supplementary curriculum. In this type students remain in regular classes most of the day but can take relevant for-credit courses in parenting and child development as well as obtain special services such as child care and counseling. Young mothers can remain in such programs or use their services after the immediate postnatal period. The third type consists of noncurricular programs in which students may get counseling, medical care and referral but obtain no credit for participating. All three types of programs are administratively separate from the regular school.

Zellman found advantages and disadvantages to each type of program. The advantage of the intensive curriculum is its separate supportive environment and attention to parenting skills. Its disadvantage is a relatively weak academic curriculum and limitation to the period of pregnancy. Most teens need support as much or more after as before the birth; they may have trouble adapting to regular classes. The advantage of the noninclusive programs is that services continue after birth; students may remain in regular school classes. The disadvantage for some students may be the embarrassment of staying in regular classes. All school programs have problems in detecting potential enrollees since there is no mechanisms for detecting pregnancy and counseling a girl on her options. A girl must announce her pregnancy, after which she will be referred to a program. Thus many fall through the cracks. Schools are even less helpful to teen parents. Provision of services during pregnancy is the limit to which most schools are willing to go. Because of the passive attitudes of school officials, and their expectations that the programs will be very expensive, the initiation of a special program often depends on the persistence of a single individual. Finally, Zellman concluded that special programs are uneven in quality and that each type meets some needs of some teens but not all those of all teens.

WIC

The Special Supplemental Food Program for Women, Infants and Children (WIC) provides supplemental foods and nutrition education to high risk pregnant and lactating women, infants, and children up to 5 years

of age. Participants receive vouchers for food such as milk, cheese, fruit juices, eggs, dry beans, peanut butter and iron fortified cereals and infant formula, a value of about $30 per month (Kotelchuck et al., 1984). An evaluation of the prenatal part of the program was conducted in 1978 (Kotelchuck, 1984). Experimental and control groups were matched on age, race, parity, years of education, and marital status. Results show improved pregnancy outcomes, including decrease in low birthweight incidence, an increase in gestational age, and a reduction in inadequate prenatal care. The impacts of WIC on teens and on unmarried women were stronger than those on other subgroups.

Improved Pregnancy Outcome (IPO) Projects

An evaluation of the effect of the North Carolina Improved Pregnancy Outcome (IPO) Project on the use of prenatal care and the incidence of low birthweight on black registrants was conducted by the University of North Carolina. The project site was an underserved poor rural two.county area. A subsample of 297 black teens was selected for special attention. The intervention consisted of introducing nurse-midwives to provide prenatal and post-partum care, the expansion of health department services to include nutrition counseling, social services and health education, coordination with a statewide perinatal care program, and outreach and transportation. Data were taken from records of vital events maintained by the North Carolina State Center for Health Statistics, matched with IPO registrant data. Black women in two geographically proximal counties served as controls. The project appeared to greatly increase the proportion of teens who received adequate prenatal care. There was no effect, however, on the birth weight of the infants of teen mothers. Three explanations for the lack of effect include 1) preexisting differences between experimental and control groups, 2) lack of information on other health conditions, and 3) low intensity of the intervention.

Summary

Both abortion and adoption prevent adolescent females from becoming parents. Adoption is used relatively infrequently. The effectiveness of programs to increase its use is as yet unknown. Abortion is widely used, particularly by teenagers. Improved contraceptive use would reduce the reliance of many on abortion to avoid childbearing.

A nutritional program (WIC) for pregnant women was very successful in improving pregnancy outcomes for teens.

PARENTHOOD

In this section are discussed comprehensive services to pregnant and parenting teenage females and other services not directed specifically at teens but which affect them, such as AFDC. A small number of programs that focus on teenage males are also discussed.

Comprehensive Services to Pregnant and Parenting Teens

Family planning programs are directed at the prevention of conception, at facilitating the planning of births. Although data on pregnancy, the most appropriate outcome variable to measure are not available because of problems with abortion statistics, still it appears as though they are relatively effective in achieving their goals. Special programs for adolescents, in contrast, usually focus on pregnant adolescents or teen parents. Thus their goals are somewhat different. In general, their goals are to improve outcomes for both mother and child. In particular, by providing prenatal care they aim to improve health of the neonate and the mother around delivery, to improve the young mother's socioeconomic circumstances by facilitating the completion of her schooling, to increase her independence by preparing her for employment, and, finally, to reduce the probability of rapid repeat childbearing. "Comprehensive programs for the already pregnant schoolgirl comprise short-term intervention with short-term goals: a healthy mother and baby, continued education, and the solution of immediate social problems that may complicate the life of the mother" (Klerman and Jekel, 1973:10).

In the following pages I describe the results of eight evaluations, which cover some 51 different project sites across the United States. I will highlight important aspects of the programs, summarize the results, and critique the evaluations.

Klerman and Jekel's Evaluation of the Young Mother's Program

The goals of the Young Mothers Program (YMP), evaluated by Klerman and Jekel (1973) in 1967-69 were the following:

1. short term: a healthy pregnancy, an uncomplicated delivery, a healthy infant and return to school postpartum.

2. Long range (two years postpartum): completion of high school or its equivalent, deferral of subsequent pregnancy, evidence of employability, and progress toward economic independence (Klerman and Jekel, 1971:31).

The major focus of this evaluation was the Young Mothers Program (YMP), a program for never marrried, pregnant girls under 18 in New Haven, Connecticut. A second program was initially used as a control

group, but wound up being a second experimental group. This was an Interagency Services Program (IAS) for unmarried pregnant girls enrolled in grades 9.12 of a Hartford public school. The control group was a group of young women age 17 or under, unmarried, resident of New Haven who delivered a baby at the New Haven Hospital in 1963-65 after having been pregnant at least 20 weeks.

YMP participants and the comparison group of mothers differed only in the incidence of toxemia, which was higher for the latter. There were, however, substantial differences in infant health. Those born to mothers in the comprehensive program were significantly healthier during the perinatal period than infants of similar mothers in the comparison group. However, subsequent infants born to mothers who participated in the medically oriented comprehensive program (YMP) had very high risk of poor outcome.

There was no significant difference in repeat pregnancy. Although subsequent pregnancy was not quite as rapid among experimental as controls in the first 15 months, by 36 months there were no significant differences in repeat pregnancy. Contraceptive use was a poor predictor of subsequent pregnancy--being in school at 3 months postpartum was a better predictor of delaying subsequent pregnancies than was acceptance of contraceptives.

Other program effects. Participants in the YMP program were more likely to stay in school during pregnancy, to return to school after delivery and to graduate from high school than controls. There was no difference among experimental and control groups in employment; however, the follow-up period differed for experimental and control groups 2 years versus 6 years after delivery.

There were few differences between the two program groups in "success"--still in school or completed school and no pregnancy--by 26 months postpartum; about 35 percent of each group fell in this category. About 31 percent of the YMP group and 24 percent of the IAS group both dropped out and had a pregnancy.

Conclusions. The experimental programs had important short term impacts in terms of mothers' and infant health. Repeat pregnancies were also delayed temporarily. The major long term impact was an increase in the proportion who completed school, an important consequence. Program effects on childbearing were apparently temporary. The subsequent childbearing of the experimental group caught up to that of controls after 30 months; in addition, subsequent pregnancies to the experimentals were at very high risk of poor outcomes. No control was available on which to compare employment experience.

AIR Evaluation of Project Redirection

Project Redirection, a demonstration program of services for low-income teenage mothers and pregnant teenagers began enrolling participants in mid 1980. The purpose of the demonstration was to "assess the feasibility and impacts of a comprehensive service program that attempts to 'redirect' the lives of young women from low-income backgrounds, those most at risk of welfare dependency because of their early parenthood" (Polit et al., 1983:2).

The specific goals of Project Redirection were the following: continued schooling, the development of marketable skills, acceptance and use of needed health care and social services, and planning for eventual employment and self-sufficiency. Specific objectives included completion of a school or GED program, delay of subsequent pregnancy, attainment of job skills, and improved maternal and infant health. Program eligibility was restricted to teenagers 1) under age 18, 2) pregnant or a mother, 3) without a high school diploma or GED, and 4) receiving welfare or living in a welfare-dependent family.

The four sites included in the evaluation were Boston, Harlem, Phoenix, and Riverside, California. Four hundred teens are included, about 200 in experimental and 200 in control groups. A second sample of 175 each was collected in 1982 but not included in the analysis so far. Matched comparison sites were Hartford, Bedford-Stuyvesant, San Antonio, and Fresno, California.

The similarities across sites were 1) the comprehensive mix of services including educational counseling, employability and employment counseling, personal counseling and referral; referral to health care services; and parenting and life management education, 2) A community woman assigned to each teen to act as support and assistance as well as mediator between program and girl, 3) An Individual Participation Plan (IPP) which specifies individual goals to work toward along the route to self-sufficiency, and 4) Linkage to WIN.

A second characteristic of this project was that an ethnographic study (Levy and Grinker, 1983) was conducted simultaneously. Interviews were collected from 18 participants, who were followed extensively over the project period. This provides an interesting supplementary source of information and confirmation of the main findings from intensive study.

The major conclusion from Project Redirection was that the program had a small impact on participants within the first year, but that most of the effects had disappeared by the second year follow-up. The project had its strongest impact on the most disadvantaged of the participants: those who were not in school at baseline, those with no work experience at baseline, younger teenagers and Puerto Rican teenagers, and teenagers with a subsequent pregnancy. The major impacts occurred in the area of schooling and employment, which were, not surprisingly,

the areas of focus for the program. Among all participants, those in Redirection were more likely to have enrolled in school after delivery, and they spent a greater number of semesters enrolled. Length of participation in the program was associated with a greater number of semesters enrolled. Among those who were not in school at baseline, Project Redirection participants were more likely than non-participants to be in school or to have completed school at 24 months post-baseline. Project Redirection enrollment was also associated with a higher rate of school enrollment and completion for those with a subsequent pregnancy.

Project Redirection participants were less likely than controls to be neither in school/completed school nor in the labor force 24 months post-baseline. They held a larger number of jobs, and a larger proportion had ever been employed at 24 months. Among teenagers in AFDC households, Project Redirection teens were more likely than control group teens to be currently employed. These differences were much stronger for disadvantaged teens high school dropouts, those with no work experience, younger teens and Puerto Rican teens and for those with a subsequent pregnancy. The outcomes were also stronger the longer the length of time in Project Redirection.

The impact of Project Redirection on teen contraceptive use was small at 12 months; there was no impact at all at 24 months post-baseline. In contrast, the birth control knowledge scores of participants consistently exceeded those of non-participants. The rate of repeat pregnancy was slightly lower for Project Redirection Participants than non-participants at 12 months; by 24 months the difference between the groups had disappeared. There were no differences between Project participants and comparison teens in prenatal care, length of hospital stay or birth weight.

Although the study was rigorously designed, with carefully matched control groups, it turned out that a substantial proportion of the control teens also obtained services from a variety of programs during pregnancy and postpartum. Thus the true comparison turned out to be between Project Redirection and a variety of other types of programs that provide services to teens. This is probably the reason for the larger impact on participants in areas unique to Project Redirection (education and employment) and the smaller impact on infant outcomes. Unfortunately, however, since this was not anticipated, the evaluation did not gather information to evaluate which particular aspects of the program or which services were most successful.

In conclusion, this is a useful evaluation of the program in general, but it doesn't provide enough information on exactly which parts of the program or which services were most successful. One good example is that of child care services. The evaluators conclude that it was not very important to these girls; however, child care assistance was available only in 2 sites--Harlem and Phoenix (Polit et al., 1983:45-48)--and, in fact, the only thing done appears to be the

"brokering of child care arrangements for those who need it" (Polit et al., 1983:45). What was actually done is not clear since "Many of the young mothers brought their children with them to on.site program activities. The sites usually provided child care, often with the help of community women or other volunteers" (Branch et al., 1984:62). Although over 90 percent indicated that their current arrangements did meet their needs, one-fifth expressed a desire to change their arrangements. It is not clear which young women received which services, making an evaluation of the program impact difficult.

Urban Institute Evaluation of OAPP Programs

The purpose of this study (Burt et al., 1984) was to evaluate how OAPP grantees implemented their programs and what impact program participation had on the lives of program clients.

The goals of OAPP funded projects are to prevent unwanted initial and repeat pregnancies, to assist adolescents to obtain proper prenatal care, and to assist pregnant adolescents and parents to become productive independent contributors to family and community life, with primary emphasis on services to adolescents who are 17 years of age and under and who are pregnant or parents. Short term objectives are to reduce the incidence of low birth weight, baby's complications, and mother's complications, and to increase school enrollment. Long term objectives are to reduce the incidence of repeat pregnancy, increase educational attainment, increase the number who obtain training and employment and reduce welfare dependency.

In OAPP projects eligibility criteria varied from project to proj- etc. The majority of participants (64 percent) entered pregnant; a small proportion (14 percent) were mothers and a small proportion (11 percent) had never been pregnant. Analyses were conducted only on females, although males made up 10 percent of the clients. In keeping with the overt goal of delivering services to young teens, 9 percent were 14 or younger, 64 percent were 15 to 17, and 26 percent were 18 or older. About one third were receiving welfare or medicaid.

This evaluation differs from others in that the programs themselves collected the data, which Urban Institute researchers subsequently analyzed. Urban Institute researchers developed the protocols so that they would be standardized across programs and trained and then subsequently provided assistance to ensure the procedure was adequately understood and followed. Unfortunately, cooperation with the data gathering part was voluntary on the part of the programs; as a result, not all cooperated. This report is based on data from 20 of 26 grantees, encompassing 30 individual projects. The advantage of the evaluation is that data were collected in roughly uniform manner across projects, and therefore are comparable. The disadvantage is that the forms were very simple and a bare minimum of entry characteristic information was collected. All projects collected aggregate data; only

a subset of 23 sites also provided individual client data. Thus individual cases could only be followed and analyzed on a subset of projects.

Two of the most important findings were the importance of child care and the length of time in the program. First, child care was a very important service. Child care reduced the probability of a repeat pregnancy by 12 months after delivery for participants pregnant at entry. For women who were mothers at entry into the program, it was also associated with greater schooling completed and being employed 12 months after birth. Second, length of time in the program was strongly associated with outcomes. The longer the number of months in the project the greater the educational attainment 12 months postpartum (among teens, women pregnant at entry), and the lower the probability of a repeat pregnancy 12 months postpartum (teens already mothers at entry). There are several other findings of note. Receipt of family planning services was associated with a lower probability of repeat pregnancy 12 months postpartum for women who were mothers at entry into the program. For many of the counseling variables cause and effect links are tenuous; many appear to be outcomes rather than causes, because women at risk of poor outcomes were often identified and receive greater attention as a result. For example, family planning and counseling services were associated with higher incidence of hospitalization of the infant 12 months postpartum. Women receiving welfare appeared to be more likely to receive a variety of types of counseling. Finally, transportation assistance was associated with school enrollment at delivery.

A third important contribution of the OAPP study was the distinction between women pregnant at entry and those who already have a child. The services needed are obviously different, and the impacts of services also differ somewhat. They should be considered separate groups.

Finally, whether services were provided on or off site did not seem to make a difference to program success. The case management approach which consisted of one individual devoted to management did seem to be associated with program success compared to no management or to division of responsibility among several individuals.

The lack of a control group greatly restricted the ability of the Urban Institute team to compare young women in the program with those who did not experience a program. The evaluators used national data from NCHS and other national studies to compare the outcomes of program participants. In general, the results were favorable on most pregnancy outcomes. On repeat pregnancies and on proportion in school/graduated, the OAPP mothers compare favorably with those in other programs and differ little from national data. They do not compare so well on employment and on welfare dependency; the mothers in the OAPP programs are doing worse than those in other programs and the national samples.

The most important result of the evaluation was the identification of specific services offered and the evaluation of their effects on clients who received the service relative to those who didn't receive the service. This is the only evaluation seen to date that does have information on timing of events and service delivery. In particular, these include date of birth, date of program entry, date services were provided, date left program, and date of follow-up. So the researcher can disentangle cause and effect to some extent. Unfortunately, the evaluators were not able to analyze these data in their report. As a result, some of the results are illogical. For example, the research showed a positive association between adoption counseling and repeat pregnancy. This was probably because women who had a repeat pregnancy were more likely to have adoption counseling rather than because adoption counseling caused a repeat pregnancy. The report also showed that women with poor outcomes for their babies were likely to have had more medical visits; again, medical visits are probably the result of anticipated poor outcomes or pregnancy problems, rather than the cause of poor outcomes. Further research is needed on data such as these to disentangle the complicated causal connections among services and outcomes.

St. Paul Maternal and Infant Care (MIC) Program

Outcomes from the MIC school clinics are favorable relative to national data and to data from the population of all MIC patients (including the hospital clinic--Edwards et al., 1977, 1980). Seven percent of the young women delivering during the 1978-79 school year had low birth weight children; 11 percent were premature. There were complications in about 15 percent of the cases, more than twice the level in older MIC patients, but comparable to national data on teenagers. The proportion who started prenatal care in the first trimester is high--94 percent--compared with slightly over half among a national sample of white teen mothers in 1982.

A follow-up study of 150 prenatal patients who delivered between 1974 and 1980 indicated that 80 percent completed high school (13 percent dropped out, 7 percent are unknown or still in school--Edwards, 1984. Of those who stayed in school, the repeat birth rate was 1.3 percent. These figures are favorable relative to national statistics which show about 58 percent of young women in school or completed school one year after the birth and a repeat pregnancy rate of 20 percent (Mott and Maxwell, 1981; Koenig and Zelnik, 1982). Of course, the repeat pregnancy rate provided by the MIC program applied only to those who remained in school. Since drop-outs are more likely to have births, this inflates the estimates of the success of the program.

Too-Early Childbearing Network

The Too-Early Childbearng Network is a network of primary prevention, care, and prevention/care programs receiving direct support from the Charles Stewart Mott Foundation (Mitchell and Walker, 1984). The Foundation also funds an Impact Evaluation Project that provides technical assistance to individual programs and encourages networking among programs. The evaluation team assists the programs with implementation of an impact evaluation model designed to produce credible evidence of program effectiveness (Mitchell and Walker, 1984).

The results so far from the projects are somewhat encouraging. Four programs showed the incidence of low birth weight babies below their local comparison data and three showed the incidence to be below national comparison figures. All projects showed that a very high percentage of children had regular health care, and this equaled or bettered local and national statistics. Three projects showed the incidence of repeat pregnancy to be lower than comparable local women or comparable national incidence of repeat pregnancy to be lower than comparable statistics. Five projects showed the proportion of participants in school or who have completed a high school program to be greater than among local and national comparison data. Three projects showed that participants were more likely than local comparison groups to be economically independent (not on Welfare) at follow-up. In two projects the proportion independent exceeded national figures.

The problem that the impact evaluation team has had is in finding adequate locate comparison groups. In general, the team tried to compare figures to local data, but these were not always available with the appropriate age and race breakdowns. As a backup, they used national statistics from NCHS and other sources. However, in the case of repeat pregnancy the appropriate national statistics were not available, and those used produced a much more favorable outcome picture than warranted from the data.

JRB Associates Projects

In their report on a national study of teen pregnancy, JRB Associates (1981) evaluated the effectiveness of five model teen pregnancy programs. All of the programs showed a lower proportion of low birthweight infants than either controls or national figures. The proportion entering prenatal care in the first trimester was greater than for controls in two of the projects; however, only two projects showed any improvement over national figures. In four projects repeat pregnancies were lower among program participants than among controls or national data.

School reenrollment was higher than either controls or national data in the four relevant projects. Employment was higher than national figures in three of the projects. Finally, the proportion

welfare free was higher than in controls or national data. Complication rates were comparable to national data.

Not enough information was included on the evaluation to be able to critique it.

McAnarney Project RAMP

The Rochester Adolescent Maternity Project (RAMP) was begun in 1969 as part of the Adolescent Program at the University of Rochester School of Medicine in Rochester, New York. An evaluation was undertaken to compare the outcomes for adolescents in RAMP to those for adolescents who received care in either a community health center (CHC) or in a hospital obstetrics clinic (HOC). RAMP delivered more services than the other programs, including a complete psychosocial evaluation, regular nurse visits, prenatal classes, social worker visits, and home visits.

Results show that RAMP girls had more pre and post-natal visits, as expected. RAMP girls showed greater use of contraception pre-pregnancy and post-partum. They had fewer repeat pregnancies, live births and abortions at the two year follow-up. There were no differences however, in average gestational age, birthweight, 5 minute Apgar score, live birth status, or fetal distress. There was no difference in school enrollment or graduation two years later, nor was there any difference between the groups in receipt of public assistance. Unfortunately, the number of participants in the evaluation was very small: 25 RAMP patients, 37 in the HOC, 20 in the CHC. Thus the results are only suggestive, not definitive.

McAnarney Project START

START, which is under the auspices of the Rochester Adolescent Maternity Project (RAMP) at Strong Memorial Hospital, stands for Services, Training, Analysis of effectiveness, and Regional Training. The purpose of the program is to provide services to pregnant 10 to 14 year old adolescents and their families. (RAMP serves adolescents 18 years of age and younger). Besides the traditional prenatal services, the services of nonprofessional family counselors and certified nurse midwives are utilized. The family counselor visits the adolescents' homes and facilitates their interactions with the clinic. Community health nurses also visit the the adolescent and her infant. The number of patients served is very small--30 patients were served in 1980-81. Data from the evaluation show that only one baby was low in birthweight (an incidence rate of 4 percent). The incidence of repeat pregnancy appears to be rather high: 16 percent were pregnant again within one year (approximately). The educational component did not appear to have been successful, and McAnarney recommends that it be dropped in the future. Only half the teens accepted educational counseling, and fewer

than half of these are still attending school, for a continuation rate of under 20 percent. All these adolescents had serious academic problems prior to the pregnancy.

This is an interesting program, but too small to evaluate successfully.

Johns Hopkins Adolescent Pregnancy Program

The Johns Hopkins Adolescent Pregnancy Program started out in 1974 as a special obstetric clinic to improve pregnancy outcomes for young teenagers delivering their babies in high risk areas around the Johns Hopkins hospital. It was soon observed that a sizable number of the adolescents had a second pregnancy soon after first delivery, and that many babies had health problems 4-6 weeks postpartum. This led to the initiation in 1976 of a follow-up component which provided preventive health services for both mother and baby at the same visit to the follow-up center. The pattern of comprehensive services was extended through community linkages. Preventive care was extended to primary health care for adolscents and their babies for about 50 percent of those delivered, the highest risk patients.

Two evaluation studies of the JHAPP programs were conducted (Hardy, 1983). The first study compared the repeat pregnancy experience of those girls who were referred after the postpartum visit to community agencies for their continued care (control) with those enrolled in the follow-up program of the Hopkins Center (TAC clinic). Girls were matched on race, year of age, and date of delivery. The repeat pregnancy experience of the experimental group was substantially better than that of the control group; the repeat pregnancy rates for the latter were similar to those of national samples of teens.

The second study compared young women enrolled in the Hopkins Comprehensive Care Clinic with those in the Teenage Clinic (TAC clinic referred to above). The former provided continuing medical care and family planning services for the young mothers, but not the intensive health and parenting education nor the psychosocial support that was available in the latter. Results showed that 36 percent of those enrolled in the Teenage Clinic and 34 percent of those enrolled in the Comprehensive Care Clinic experienced repeat pregnancies within two years of delivery. Thus there was no difference between the programs, and very little improvement over national figures for repeat pregnancy within two year (37 percent) (Hardy, 1983).

This evaluation is specifically focused on assessing repeat pregnancy rates. Unfortunately, the methodology used to assess such rates are not clear, and from the written report it is difficult to extract repeat pregnancy rates at 2 and 3 years. Data are not given for 1 year repeat pregnancy rates. A life table methodology would have been preferable. The second problem with the evaluation is that the comparison

groups are simply other adolescent pregnancy programs. Yet it is not entirely clear what services the adolescent received in each of the separate programs mentioned and how they might differ. In any case, using other programs as comparisons would seem to reduce the likelihood of finding significant program effects.

Prenatal/Early Infancy Project

This study evaluated a comprehensive nurse-home visitation and transportation service designed to improve pregnancy outcomes and child health and development in a group of families at risk for pregnancy and childrearing dysfunctions. The nurse home-visitation program began during pregnancy and followed the families through the second year of the child's life. Mothers of all ages were included in the study, but analyses were conducted and data tabulated separately for high risk groups (e.g., adolescent mothers). The study consisted of a true experimental design, with families randomly assigned to one of four treatment groups. Families in the first condition received no services during pregnancy (other than the excellent quality standard prenatal care provided locally). Screening was provided at 12 and 24 months. Families in the second condition received free transportation to regular prenatal and well-child visits as well as the screening offered the first group. Families in the third condition received nurse home visitation during pregnancy, in addition to transportation and screening. Families in the fourth condition received nurse home visitation during the children's first two years of life, in addition to the prenatal home visitation, transportation, and screening offered the third group.

The major differences in treatments were between the first-second and third-fourth groups. Treatment effects were strongest for the highest risk groups--adolescents, smokers and unmarried women. The nurse-visited young (14-16) adolescents gave birth to newborns who were nearly 400 grams heavier than those born to adolescents in the comparison group. 89 percent of the poor unmarried, young mothers (under 19) who were visited by a nurse had either completed or returned to school, compared to 52 percent of those comparable mothers who had no nurse. There was essentially no reduction in the incidence of repeat pregnancy among adolescents.

This is a very well-done, interesting study of the impact of an innovative program. It takes a number of factors placing women at risk for poor maternal and child outcomes and considers their effects both jointly and separately. It is especially good because smoking is included as a risk factor. The results show clearly that the program has some positive benefits for adolescents; the benefits for older women, particularly married women are less clear. The random assignment feature and the use of different types of treatments is very good. Unfortunately, since most women can obtain excellent care through existing services, the effect of the treatment is really only marginal.

Thus the fact that some effects are significant among important subgroups such as adolescents is important. In addition, since the program included women of all ages, the the sample of unmarried women under 18 consisted of only 112 cases, which were divided into 4 different treatment groups. However, the fact that significant effects were found is encouraging.

Comparison of These Evaluations

One of the important contributions of Klerman and Jekel's evaluation was methodological. It constituted a very careful analysis of the effects of programs and served as a model for later analyses. Substantively, it showed clearly the decay of short term gains that resulted from a program, and it pointed out the importance of distinguishing between short.term and long term effects. Finally, it pointed out the importance of looking at repeat pregnancies as an important outcome. Women having repeat pregnancies were especially at risk of undesirable outcomes

The Project Redirection staff also discovered the importance of focusing on delaying repeat pregnancy. They did not focus much importance on it at first, but, soon alarmed at the number of repeat pregnancies, began putting more pressure on participants to contracept effectively. Project staff monitored contraceptive use and the community woman checked up on participants assigned to them. In one site (Phoenix), teens who became pregnant again were terminated (see Branch et al., 1984:49).

The issue of repeat pregnancy is a tough one for programs. Klerman and Jekel noted how hard it is for a program/its personnel to say 1) you can postpone the next baby if you want to but 2) if you become pregnant again come see us again early. They hypothesized that perhaps young mothers felt guilty about returning pregnant to a program which had stressed contraception, and that is why subsequent pregnancies had less adequate prenatal care (Klerman and Jekel, 1973:68). (On the other hand, it may simply reflect a selection problem--the most careless girls become pregnant again, although Klerman and Jekel didn't seem to think this was so, Klerman and Jekel, 1973:68).

The contribution of the American Institutes for Research evaluation of Project Redirection was also methodological it represented a very careful evaluation of overall program impacts over a relatively short term (24 months). However, there was no possibility of determining which aspects of the program produced which results. Later analyses to sort out different program aspects and their impacts would be helpful, especially since there were a number of innovations. The effect of the community woman would be particularly helpful to know.

The contribution of the OAPP evaluation was precisely the attempt to look at the contribution of specific services provided teens. Un-

fortunately, this evaluation was not capable of determining overall program impact because of the lack of a control group.

The Prenatal/Early Infancy Project represents the trend toward more rigorous program evaluations. Subjects were randomly assigned to treatment/comparison groups; several types of interventions were tested simultaneously; and a number of risk factors were considered simultaneously in looking at outcomes of the project. In addition, the project was located in one area, treatment conditions were uniform across all subjects in each condition, and the project was relatively modest in size, but not too small for effective evaluation. This project appears to provide a valuable model for other evaluations. Probably the most important contribution was to show that separate aspects of the program could be evaluated at the same time by developing different treatment conditions.

The Too Early Childbearing Network has serious problems in developing effective evaluation because of lack of appropriate local control groups. The national data are useful, but are hard to make comparable enough (in terms of race, age, SES) to be of use.

The McAnarney Project was simply too small for effective evaluation. The evaluation of the Johns Hopkins program mixes evaluations of different types of programs and does not clarify what types of services are being provided in which program. As a result, the conclusions are weak and unclear. Finally, not enough information is included in the description of the JRB Associates program evaluation to adequately evaluate it.

Economic Approaches

One major barrier to the participation of males in teenage father programs is that services often fail to meet their real life needs. "Commonly, young men will not enter a program unless it provides them with job-related skills and training; they will not stay in a program over time unless it helps them deal with their more personal, relationship-oriented problems" (Klinman et al., 1985:14). This suggests that a substantially different type of program is needed to attract and keep males than programs traditionally oriented to teenage mothers. Job training should constitute a major part of such programs. An appropriate set of services such as legislatively mandated for teenage mothers has not been established for teenage fathers.

Delaying family formation or preventing repeat childbearing has not been a primary goal of job training programs. In fact, most programs appeared to ignore the family responsibilities of enrollees, in spite of the fact that a large proportion of male and female participants have children of their own. As a result, there is not much evidence as to the impact of such programs on teen childbearing. One evaluation of the Job Corps conducted by Mathematica Policy Research

found that, among young women, participation in the Job Corps appeared to delay family formation and reduce the incidence of extramarital childbearing, and that the impact on employment, earnings, education and welfare receipt was larger for women without children than for those with children (Mallar et al., 1978).

A second study which promises to provide more information on the impact of youth programs on family formation is one currently under way by Olsen and Farkas. The program whose data they will evaluate is the Youth Incentive Entitlement Pilot Projects (YIEPP). This program guaranteed jobs to 16 to 19 year olds enrolled in school if they stayed in or returned to school and met specified attendance and performance standards (from Simms, 1984). Although early results suggested no impact of the program on the rate of childbearing (which was high) among females, a three year study cited above will analyze these data in greater detail, looking for impacts among certain groups of participants (Olsen, 1984).

A third project, the Teen Fathers Project, was conducted between April 1983 and March of 1985 by Bank Street College in 8 sites around the country. This project obtained teen fathers through their female partner, outreach workers, the school, YMCA and word of mouth. Some 400 teen fathers received job training, job skills, job referral service, educational counseling, and instruction on site in parenting skills. The goal of the program was a change in educational status--obtaining a GED or returning to school, obtaining employment or job training, parenting skills, and increased knowlege of and involvement with the child. Since this was a demonstration project, the developers were not sure how successful they would be at recruiting fathers. Pretest and posttest data were collected; no control group was obtained. The evaluation will simply compare before and after measures on the fathers. Since the program has been successful in recruiting teen fathers, the project will continue with a more rigorous evaluation. The final report on the first phase of the project is due in the fall of 1985.

A fourth study, currently being conducted by Public/Private Ventures is is its second year. This project provides summer employment and remedial education to 14-15 year olds during two summers in a rwo, with a support component during the school year. The goal of the project in the short term are 1) to produce learning gains instead of decline in the summer months, and 2) to improve knowledge of birth control and outcomes of teen pregnancy. Interim (medium length) goals are 1) improved school performance. 2) improved labor market performance, and 3) improved contraceptive use. Long term goals include 1) high school graduation, 2) improved labor market performance, and 3) lowered teen parenting. Those eligible for the program are those eligible for job training programs--enrolled in school, poor, and educationally deficient. the evaluation which is being conducted along with the program randomly assigns youth to treatment or control groups, and obtains information through a pretest, telephone follow-ups, infor-

mation from school records each semester, and a final interview 6 months after putative graduation date. The control group receives full-time summer work, but no other intervention. The first phase of the program was implemented in 1985-86 with 1,600 youth in 5 U.S. cities.

Results from the first summer of the program show that the program had some positive impacts on enrollees. In particular, the program was successful in stemming the learning losses that would have occurred in the absence of the treatment. While treatment youth scored higher than control group youth at post-test in both reading and math, both groups experienced losses. The losses experienced by the control group were significantly larger than those experienced by the treatment group. Females and Hispanics appeared to benefit the most from the program. Participants' knowledge of birth control was increased. Finally, more treatment boys reported abstaining from sex during the program than control boys.

Welfare and Medicaid

AFDC is the major federally funded and state administered welfare program in the United States. It provides cash assistance to economically needy individuals who are eligible by virtue of being a female family head with children under 18, and meeting certain income requirements. Female subfamily heads are also eligible for themselves and their children or for their children only. Some states have instituted a program which makes eligible families in which the father is present but unemployed and who also fall below a certain minimum income level. Medicaid is a health insurance program available to all AFDC recipients.

There has been a considerable attention paid to the hypothesis that generous transfer payments create an economic incentive to early childbearing. It is not possible to test empirically whether the existence of transfer payments under the AFDC program affect early childbearing, since all states provide transfers under the program. However, there is substantial variation in level of payments and in eligibility requirements, which are reflected in acceptance rates, and these can be related to fertility levels.

This debate has a long history, going back at least to the late 1960s. A study by Placek and Hendershot (1974) that tested a number of propositions drawn from this belief for welfare recipients of all ages found no support for what has been called the "Brood Sow" myth. In fact, they found welfare mothers more likely to use contraception when on than when not on welfare, less likely to define pregnancies as wanted, and less likely to have a subsequent pregnancy when on than when not on welfare. Of course, this paper did not specifically address the issue of teen childbearing. In an early study of out-of-wedlock birth rates in 58 SMSA's, Janowitz (1976) found that a higher

level of state welfare benefits was associated with higher out-of-wedlock birth rates among teenagers, net of other factors such as level of schooling, earnings and unemployment. However, whether the state also had a unemployed fathers program in AFDC(AFDC-U) was also found to be associated with higher out-of-wedlock birth rates for teenagers, a counter-intuitive finding. Thus the AFDC variable may be a proxy for variables which are associated with it, but which are not controlled in the model. This is especially a problem for this analysis since AFDC payments are only obtained at the state level, while birth rates were measured for each SMSA as a whole. Several recent studies have tested the association between welfare and teen childbearing. None found any impact of either level of AFDC benefits or acceptance rates on out-of-wedlock birth rates among teens in 1971, 1974 or 1975 (Field, 1981; Moore and Caldwell, 1977; Moore, 1980).

Moore and Caldwell (1977) also explored the impact of AFDC benefit level and acceptance rates on initiation of sexual activity, pregnancy and pregnancy resolution among teens. They found weak and inconsistent effects which led them to conclude that there was no association between welfare generosity or acceptance rates and the probability of initiating sexual activity or becoming pregnant. However, they did find effects of relatively generous AFDC benefit levels on the probability of abortion. Teens in states with relatively generous benefit levels were less likely to have an abortion. On the other hand, teens in states with low AFDC acceptance rates were found to have a higher probability of bearing an out-of-wedlock child. The authors concluded that there was no statistically significant evidence linking welfare availability with the probability of carrying an out-of-wedlock pregnancy to an out-of-wedlock birth (Moore and Caldwell, 1977:166-167). The authors also looked at the impact of having an unemployed father program on pregnancy resolution. They found that women in states with such a program were, in fact, no more likely to marry, but were less likely to bear an out-of-wedlock child.

Recent analyses of California data collected in 1972-74 (Leibowitz et al., 1980; Eisen et al., 1983) found that premaritally pregnant girls receiving state financial assistance (welfare) were less likely to marry and more likely to bear an out-of-wedlock child than comparable girls not currently receiving such assistance. This study is flawed. The major problem is that eligibility for welfare receipt is measured by current welfare receipt. In fact, many of those young women not currently on welfare would be eligible if they gave birth to a child out of wedlock. This measure of welfare availability is probably contaminated by attitudes toward welfare recipiency, by awareness of welfare availability, and by prior intention to carry out or abort the pregnancy. Those intending to bear a child out-of-wedlock have a greater incentive to establish welfare eligibility than those not planning to bear the child. Thus the causal direction of the association is unclear (Moore and Burt, 1982).

A recent study by Ellwood and Bane (1984) used data from several large nationally representative data sets, the Survey of Income and Program Participation, and the 1960 and 1970 Censuses to explore the impact of welfare on AFDC on divorce and separation, births to non-married women, single parenthood, female headship and the living arrangement of single mothers. The study differs from the others described earlier in that it controlled statistically for a number of unmeasured differences between states. In addition, it used three different types of methodologies to answer the question of the impact of AFDC: a comparison of likely versus unlikely recipients, of eligibles versus non-eligibles, and of AFDC benefit levels and changes in family and household structure and fertility over time. The authors concluded that they could isolate no impact of the maximum AFDC benefit for a family of four on births to non-married women. However they did identify several effects on family and household structure. In particular, divorce and separation rose slightly with a $100 increase in the AFDC maximum benefit, as did single parenthood and female headship. The largest increase was in the probability that a young single mother would live independently, an increase of 50 to 100 percent in one analysis. This analysis supports previous work that shows no impact on fertility. However, it also showed that AFDC does affect the living arrangements of young women; it permits them to live independently of their families.

The conclusion is that level of welfare benefits and acceptance rates and other indicators of availability do not appear to be associated with sexual activity or pregnancy; however, they may be associated with whether or not a girl who is pregnant decides to abort, marry or bear an out-of-wedlock child, and with whom she chooses to live. The evidence is not very strong; more research is needed.

The availability of Medicaid and other health care benefits might also affect teen childbearing. In particular, by improving the health of the mother and baby during pregnancy it could reduce the number of miscarriages and increase the number of live births. The availability of Medicaid to cover the cost of an abortion might increase the number of teens who would opt for abortion over a live birth. However, this would apply to teens who either already had one child, or those living in families receiving welfare already. The only research on this to date has been conducted on the issue of Medicaid coverage of abortions and teen fertility (Moore, 1980)(see earlier discussion). Results were inconclusive. Given the lack of effects of AFDC found so far, it is unlikely that Medicaid benefits would be found to have an impact either. Recent legislation extends Medicaid eligibility to pregnancy if a woman would be eligible at birth. The fact that medical costs are covered may, in fact, encourage a young woman to bear and keep the baby. However, reported time delays in getting on Medcaid may reduce the likelihood that such coverage will affect childbearing.

SUMMARY AND CONCLUSIONS

It is important to caution the reader, first, that it is difficult to show causal relationships between policies or programs and individual behavior. There are so many other factors, many of which are discussed in earlier chapters, that do affect individual behavior, factors more proximate or immediate in terms of the consequences to the individual. Programs and policies should not be expected to have large impacts. That some have been found to have impacts and that others have not is, therefore, of great interest and importance.

Programs to Prevent Sexual Activity

Sex education programs appear to be consistently associated with increased knowledge about sex and sexual behavior among participants; however, there is little evidence for a relationship with sexual activity. In spite of common beliefs, those taking a sex education course do not appear to change their own beliefs and values, although they do become more tolerant of the beliefs and values of others.

Parental involvement is more a moral issue than one of consequences. That is, even if parental knowledge or communication about the sexual activity of their children were not found to have any relationship at all to their sexual and contraceptive activity, many would still consider it an important issue. There is some evidence that parent-child programs do increase communication about sex and birth control between parents and children. The evidence for an impact of communication on their children's behavior is weak.

Programs to Prevent Pregnancy

There is growing evidence that sex education programs are associated with improved contraceptive use among those young women who are sexually active. More needs to be known about what aspects of sex education programs are associated with improved contraceptive use among teenagers.

Family planning programs have been frequently and effectively evaluated. As a result, we know a lot about such programs. There is no evidence that the availability of family planning services increases sexual activity among female teenagers; however, it does appear to improve contraceptive use and reduce their chances of having an unplanned pregnancy and out-of-wedlock birth.

A number of clinic characteristics appear to be associated with attracting teens early in their sexual careers. These are related to outreach and community relations efforts, the convenience of attending the clinic, and the availability of contraceptive services from physicians and pharmacies. Most of the same factors also promoted clinic

continuation among those who initiated clinic attendance. Another study found that mean levels of contraceptive use were highest in clinics in which clients expected and staff employed authoritative guidance in helping the clients to select a contraceptive method. Finally, a third study found client satisfaction with her method to be the best predictor of contraceptive continuation.

The only relatively rigorous evaluation of a school-based program is that of the St. Paul MIC project. The evaluation data suggest substantial effects on birth rates in the school (which declined) and substantial effects on post-delivery enrollment among mothers (which increased). Neonatal and maternal outcomes do not differ from national statistics.

One available evaluation of a non.school based prevention program (West Dallas Youth Clinic) suggested that the program had been successful in reducing teen birthrates.

Pregnancy and Pregnancy Resolution

For a young woman who is premaritally pregnant, the availability of abortion is associated with a greater probability that she will have an abortion and a lower probability that she will bear a child out-of-wedlock.

There are no available evaluations of the recently funded programs directed at increasing adoption as a resolution to teen pregnancy. Given the small incidence of termination of parental rights, such a program is not likely to have a major impact on teen childbearing (Bachrach, 1985; Muraskin, 1984), although more research is needed on this issue.

Public school programs for pregnant teens are limited in availability and scope. A complete review and evaluation of these programs was not attempted in this chapter.

WIC, a nutritional program for pregnant and parenting women, has been shown to successfully reduce the incidence of low birth weight babies, an impact which is especially strong for teenagers.

Parenthood

Teenage pregnancy programs are directed primarily at pregnant teens and/or teen mothers. Such programs appear to have relatively short term impacts on specific targetted goals. For example, medical programs improve infant health; education programs improve educational outcomes; programs emphasizing employment improve employment outcomes. Several types of programs do appear to reduce subsequent childbearing; however, the effects are somewhat weak and may be relatively short-term

on impact. Substantial long-term effects on schooling appear to be robust. Programs for teenage fathers are relatively new and have not yet been evaluated.

An area of great interest is that of the impact of welfare availability and benefit levels on sexual activity and out-of-wedlock childbearing. There is little theoretical rationale for expecting an association between welfare benefits and initiating sexual activity, and no evidence exists for an empirical relationship either. However, there is a stronger argument that for some pregnant teens, welfare may be an attractive option. It may not be a salient option for a middle income girl; however, it may be one for a girl from a low income family. In fact, of the two studies to ask this question, one shows that pregnant girls who are receiving financial assistance in the form of welfare are more likely to bear a child out-of-wedlock and less likely to marry or abort. However, since the other study to explore this issue fails to find such a relationship, this association does not appear to be definitive. A third study found, rather, that AFDC does affect living arrangements, increasing the likelihood that a teen mother will live independently. The one study that looked at contraceptive use by welfare mothers found that welfare mothers were more likely to use contraception, less likely to define pregnancies as wanted, and less likely to have a subsequent pregnancy when on than when not on welfare. Unfortunately, these recipients included women of all ages, not just teenagers.

Conclusions

A variety of types of programs have been reviewed in this chapter. They have been grouped according to their primary focus: prevention of pregnancy versus amelioration of the unfavorable potential outcomes of "early" childbearing. Unfortunately, approaches to prevent pregnancy other than providing contraception (or information about it) are still in the developmental stage. There is no evidence so far that such approaches prevent sexual activity, encourage contraceptive use or prevent pregnancy. In contrast, all the evidence provided overwhelmingly supports the effectiveness of provision of contraception in preventing pregnancy. Whether this be conducted by family planning clinics or private physicians depends in part on characteristics of the individual seeking such services. Clinics are especially important sources for black and poor teenagers. Recent work has focused on placing the clinics where they can serve teenagers even better--in the schools. The little evidence there is (one project) does suggest some success in reducing birth rates and keeping teens in school. There is no evidence as to whether pregnancies are actually prevented by such school clinics, however.

Once pregnant, a number of factors influence the decision as to how to resolve an unplanned pregnancy. The availability of abortion may result in a young woman selecting abortion over either adoption or

bearing an out-of-wedlock child. At the present time the number of young women who terminate their parental rights to a child in the United States seems to be very small. There is little or no research that looks at the long term nonhealth effects of either abortion on the young woman or on the long term nonhealth effects of giving up a child for adoption on the young woman and her child.

Nutrition programs (WIC, in particular) are effective in improving infant outcomes to teen mothers.

Finally, there are several models of programs to serve teen mothers that have been implemented and evaluated. These evaluations suggest short-term effects in the areas of focus of the program. Substantial long-term effects for all teenagers have yet to be demonstrated; some research (Olds; Polit et al.) suggests that the most disadvantaged teens may benefit most from such programs. If so, this is somewhat encouraging news. On the other hand, the McAnarney program illustrates the difficulty of reaching the youngest teens. The evaluations reviewed do point out the importance of evaluating not just the program as a whole against other programs, but of evaluating specific program components. The research so far provides less than adequate information to evaluate what aspects of the programs currently in operation produce what results for what types of young women (and men). As a result, it may be too early to promote particular exemplary program models.

Note

1. Authoritative guidance refers to the nurse, an authority figure either telling the client what birth control method to use or persuading her to use a particular method.

CHAPTER 10

ESTIMATES OF PUBLIC COSTS FOR TEENAGE CHILDBEARING: A REVIEW OF RECENT STUDIES AND ESTIMATES OF 1985 PUBLIC COSTS

Martha R. Burt with Frank Levy

Teenage childbearing is a "hot topic", not least because legislators, program officials, and the general public are beginning to realize the tremendous costs it imposes. During the last 5 years several attempts have been made to obtain good estimates of these costs. Most interest has focused on public costs--AFDC (welfare), food stamps, medical assistance and social services. However, at least one study looks also at private costs. Two studies explore these costs at a national level; four others focus on a single state, county, or other local geographical area.

These studies use quite varied methodologies and arrive at quite different cost estimates. Some studies calculate the public cost over a 20 year period of the family begun by a single teen birth, and the total cost for the same 20 year period of the cohort of families begun by a teen birth in a single year. They ask, for example, what will the family of a woman who has her first baby as a teenager in 1985 cost the public by the time her first baby reaches adulthood? Estimates range from $13,852 per family (Mecklenburg County, NC, in 1979 dollars) to $18,710 (nationally, in 1979 dollars). The model study of this type is the one conducted by SRI International (1979) for the Population Resource Center. This study estimated that the family begun by each first birth to a teenager in 1979 would eventually cost taxpayers $18,710 (value in 1979 dollars); further, it estimated that all families begun by first births to teenagers in that year alone would eventually cost taxpayers at least $8.3 billion (in 1979 dollars). Throughout the rest of this paper, these figures will be referred to as "single birth cost" and "single cohort cost," respectively.

All but the final section of this chapter was originally prepared by Burt for the Center for Population Options and published by CPO under the title, "Estimates of Public Costs for Teenage Childbearing: A Review of Recent Studies and Estimates of 1985 Public Costs," and is reprinted with the permission of the Center for Population Options. The final section on the uses of these costs in benefit-cost studies was jointly written by Burt and Levy.

This methodology uses as its population base all teenagers experiencing a first birth. Many of these teens will never receive welfare. The cost estimates are averages, spreading the public cost incurred by some teenagers over all teenagers. Therefore, they will be considerably lower than estimates which include only welfare recipients as their base.

Other studies estimate the total public outlay in a given year that is attributable to teenage childbearing, including expenses for families in which the first birth occurred when the mother was a teenager, even though she may now be considerably older. Since approximately half of the AFDC caseload at any time consists of families begun by a teen birth, but only 4 percent of these families are headed by women who are currently teenagers, this figure--total public cost for a single year--is very large. The model study of this type, Moore, Wertheimer and Holden (1981), estimated that the public spent $8.6 billion in the single year of 1975 on AFDC, Medicaid and food stamps for families begun by a teen birth. This figure will be referred to as "single year cost" throughout this paper.

Table 1 summarizes the costs estimated by the studies reviewed. The remainder of this paper describes the studies reviewed, and discusses the methodological issues they raise.

PART I

THE STUDIES

For each study reviewed, the title of the appropriate document, its author(s), the jurisdiction studied, the data sources and years used, and the dollar estimates developed are given first, followed by a brief description of the report's contents.

National Studies

Single Birth and Single Cohort Cost Estimates

Title: "An Analysis of Government Expenditures Consequent on Teenage Childbirth. Menlo Park, CA: SRI International, 1979. (37 pages)
Author(s): None listed
Jurisdiction: Entire United States
Data Sources and Year(s): 1976 U.S. natality statistics; published studies of welfare and other service costs, and studies of probabilities that families begun by a teen birth will receive these services. All expressed in 1979 dollars.

TABLE 1 Summary of Cost Estimates for Teenage Childbearing from Local and National Studies

Study	Single Birth Cost	Single Cohort Cost (in millions)	Single Year Cost (in millions)	In Constant 1985 $7
SRI International1	18,710	8,300	Not estimated	27,272
Mecklenburg Co., NC2	13,852	12	estimated	20,191
St. Louis3	17,675	82	Not estimated	21,463
Moore, Wertheimer and Holden4	Not estimated	Not estimated	8,550	16.33 bil
Wertheimer and Moore5	Not estimated	Not estimated	5,830	11.14 bil
Monroe Co., NY6	Not estimated	Not estimated	26 (1977) 24 (1978)	0.44 bil 0.38 bil

1For U.S. as a whole; expressed in present value 1979 dollars.
2For Mecklenburg County (Charlotte), NC; expressed in present value 1979 dollars.
3For St. Louis city and 8 surrounding counties; expressed in present value 1981 dollars.
4For the U.S. as a whole, expenditures estimated for 1975, in 1975 dollars.
5For U.S. as a whole, expenditures estimated for 1990, in constant 1982 dollars, incorporating the more restrictive eligibility criteria for welfare programs legislated by the Omnibus Budget Reconciliation Act of 1981 (P.L. 97-35).
6For Monroe County (Rochester), NY, actual expenditures for 1977 and 1978.
7Using OMB deflator for payments to individuals.

Single Birth Cost: $18,710
Single Cohort Cost: at least $8.3 billion

This report serves as the model for many of the local studies described below. SRI used a variety of published statistics to develop its estimates of cost and welfare and service utilization. Most jurisdictions can develop parallel local statistics and calculate similar cost estimates for local decision making. The major contribution of this study lies in the clarity of its assumptions and in its methodology. Because these have been adopted in other studies, they are described here in some detail.

SRI used all births to teenagers, whether married, premarital conceptions or out-of-wedlock, on the assumption that births to teenagers under any circumstances increase the risk of public dependency. Their single birth cost is calculated by dividing the total single cohort cost by the number of first births to teenagers. All higher order births to teenagers are treated as extended costs of a first birth to a teenager. They calculated costs separately for three age groups--14 and younger, 15-17, and 18-19--because teenagers giving birth at each age encounter significantly different risks and probabilities for using different services.

SRI calculated medical costs for the year of pregnancy and birth and for the next 9 years (but not for years 11-20), because the overwhelming majority of medical costs occurred in those years. Welfare costs are calculated for 20 years, including the year of the birth, and adjusted for the probability that the household would still be on AFDC for each year after the first birth. Medical costs included charges for prenatal care, normal, C-section and"complications" deliveries, normal pediatric care, and pediatric care required because of the special medical problems encountered by some proportion of children born to teens. Welfare costs included AFDC, food stamps and other food programs, social services, and public housing expenditures.

Further, SRI discounted further costs. Discounting takes into consideration that a dollar in hand today is worth more than a dollar 10 years from now, because it can be used to earn money in the meantime, thereby offsetting some future costs. SRI assumed that a dollar invested today could earn an average of 10 percent a year, but that inflation would absorb 6 percent of that (on the average), leaving a net discounting factor (or real interest rate) of 4 percent, compounded annually. All future year costs of teenage childbirth were discounted by this rate. SRI's figures for Single Birth Cost ($18,710) and Single Cohort Cost ($8.3 billion) are therefore expressed in "present value" (i.e., discounted) dollars--the amount one would need to commit now to meet the present and future costs associated with a single first birth or a single cohort of first births.

Finally, SRI calculated full costs, not marginal costs. See the discussion of Walentik (1983), done for the Danforth Foundation with respect to St. Louis and surrounding counties, to understand the implications of this methodological decision.

Single Year Cost Estimates

Title: "Teenage Childbearing: Public Sector Costs." Final Report to the Center for Population Research, NICHD, on Contract No. NO1-HD-92822. Washington, D.C.: The Urban Institute, 1982. (205 pages, plus appendices).
Author(s): Richard F. Wertheimer and Kristin A. Moore
Jurisdiction: Entire United States
Data Sources and Year(s): Method 1: Current Population Survey (CPS) for March, 1976; Survey of Income and Education, 1976; and AFDC Survey,

1975 were the data bases for cost estimates. The National Longitudinal Survey of Young Women and the Panel Study of Income Dynamics were used to establish probabilities of receiving AFDC, given specific household characteristics. TRIM, the Transfer Income Model, is a computer simulation model designed to assign benefits on the basis of household characteristics and income. It was used to produce the cost estimates based on the CPS and the SIE.

Method 2: Following this work, a dynamic simulation was run to "age" the population to the year 1990 and assess the welfare status and other characteristics of individuals at that time.

Single Year Cost: by Method 1--$8.55 billion for 1975; by Method 2 --$5.83 billion for 1990.

This research study's primary goal was to project public sector costs associated with teenage childbearing to the year 1990, using assumptions about welfare eligibility based on the Omnibus Budget Reconciliation Act of 1981's more restrictive provisions, and to simulate the effects of alternative scenarios on these costs. Among the alternative scenarios tested were: What if births to teenagers under 20 (or under 18) were cut in half? What if only married teens had babies? What if second births to teen mothers were delayed? What if all teen mothers completed high school?

For our purposes, the important and widely cited part of this study is its estimate of AFDC, Medicaid and food stamp expenditures in the single year of 1975 that went to families begun be a teen birth (regardless of the mother's current age). Throughout the rest of this paper this figure will be referred to as "single year cost." In 1975 that cost was estimated to be $8.55 billion.

This estimate was developed using computer simulations (TRIM, the Transfer Income Model) and several national data sets (the March 1976 Current Population Survey of nearly 50,000 households; the Survey of Income and Education, 1976; and the 1975 AFDC Survey) to derive costs for AFDC and food stamps. Various adjustments were made for the SIE, which underestimates the number of babies present in households--notably, the SIE was adjusted to conform to the number and distribution of births recorded in vital statistics records for 1976, and for the known total budget for AFDC for that year. Medicaid costs were estimated by applying average Medcaid expenditure for recipients of different ages to the AFDC Survey date. The methodology used in making these estimates is described briefly in Section I and Appendix A of the study's Final Report.

This methodology, and the methodology of the larger dynamic simulation leading to the figures for 1990, is certainly more sophisticated, and more expensive, than feasible for most local jurisdictions or states to use. Nor is it necessary for local purposes, since this study provides a conservative guideline for calculating local AFDC

expenditures. Regardless of which survey was used as the data base, or whether estimates were adjusted or unadjusted, all methods of calculating costs resulted in estimates that 50-56 percent of AFDC costs, or AFDC and food stamp costs, were spent on households begun by a teen birth. Therefore, local efforts to quantify single year costs attributable to teenage childbearing could simply assume that 53 percent (or 50 percent, or 56 percent) of the AFDC expenditures for a given year were attributable to teenage childbearing. The same assumption could also reasonably be applied to that proportion of food stamp expenditures that went to AFDC households during a given year.

Alternatively, many states are now calculating the proportion of their AFDC caseload attributable to teenage childbearing (that is, the proportion of current cases that involve a family begun by a first birth to a teenager). If a jurisdiction has local figures available on this proportion, the local figures should be used.

Local Studies

Single Birth and Single Cohort Cost Estimates

Title: "Financial Report: Adolescent Pregnancy." Charlotte, NC: Mecklenburg Council on Adolescent Pregnancy, n.d. (probably 1980). (7 pages)
Author(s): None listed.
Jurisdiction: Mecklenburg County, NC (Charlotte)
Data Sources and Year(s): 1979 births and welfare/service cost data from county and state agencies and private studies.
Single Birth Cost: $13,852
Single Cohort Cost: $11,746,283

This report is very brief and to the point, presenting a "balance sheet" on the public cost of first births to teens in 1979, projected for 20 years. The report follows the methodology developed by SRI International for projecting these costs, including discounting, using only first births in the base year, treating teenagers 14 and younger, 15-17 and 18-19 as separate categories, and using first births to all teenagers (not just out-of-wedlock births). Public costs included were maternity, pediatric and other Medicaid benefits, WIC, AFDC, food stamps, school lunch and day care. (The report did not specify how day care costs were calculated).

Total discounted (present value) public costs for 848 first births to teenagers in 1979 were $11,746,283, or $13,852 per first birth. The report also presents another figure--the amount of money that should be "set aside" with each adolescent birth (not just first births) to cover present and future benefit payments. This figure was calculated at $10,250 in 1979. This latter figure is somewhat misleading. It is derived by dividing the Single Cohort Cost ($11,746,283) by the total number of births in 1979 (1,146), whereas the Single Birth Cost

($13,852) is derived by dividing the Single Cohort Cost by the number of first births (848) and assuming that second and higher order birth costs are part of the consequence of a first birth that occurred in an earlier year. If, as the report states, the authors followed the SRI methodology, then the Single Cohort Cost should represent the cost of first births, with all their consequences over the next 20 years including subsequent births while the mother is still a teenager. $13,852 is the amount that should be "set aside" for all first births, and it should cover the cost implications of subsequent births.

Title: "Teenage Pregnancy: Economic Costs to the St. Louis Community." St. Louis, Mo: Danforth Foundation, 1983. (37 pages)
Author(s): David S. Walentik
Jurisdiction: St. Louis SMSA, consisting of the city of St. Louis, four surrounding Missouri counties and four surrounding Illinois counties.
Data Sources and Year(s): 1981 local and Missouri birth statistics, local, Missouri and national costs figures and probabilities of using different services.
Single Birth Cost: $14,041 (for each birth, including first, second and higher order births) ($17,675 if you use only first births but the report does not calculate this figure)
Single Cohort Cost: $81.8 million

This study applied the SRI methodology, with three exceptions, to 1981 data from the St. Louis area. The first exception is that the cost calculations were based on an 18 year rather than a 20 year projection. The second exception is that the calculation of Single Birth Cost was based on the total number of births to teenagers in that year, rather than on first births to teenagers. However, a Single Birth Cost figure comparable to SRI's and to Mecklenburg County's can be calculated from data in the report.

The third exception is more critical, and raises an important issue for all studies deriving cost estimates. The St. Louis methodology calculated a marginal cost to teenage pregnancy, whereas the SRI study calculated full cost. The difference is this. Although teenage mothers have an increased probability of welfare dependency, women who have their first birth at age 20 or later still have some probability of receiving welfare, and having other costs of their pregnancy and childrearing borne by the public. Further, most interventions will at best delay births until teenagers reach the age of 20 or more; they will not entirely prevent births. Many personal characteristics of these women predict to some level of welfare dependency even if they succeed in delaying childbearing into their 20's.

The St. Louis study sought the marginal increase in public cost attributable to a teen birth, over and above the probable cost to the public of a birth to a non-teenager. The SRI study calculated the full cost borne by the public of a birth to a teenager, without taking into consideration that the public would have some probability of

incurring welfare costs regardless of the age of the mother at first birth.

Both figures are important. The full cost figure will obviously be larger than the marginal cost figure; but it would mislead policy makers to infer that the public would save the full cost if teenagers delayed childbearing. Rather, they would save the marginal cost. Wertheimer and Moore (1982) estimate that reducing births to women under 20 by 50 percent would save only 20 percent of welfare expenditures. Presumably the savings would be close to 40 percent if all such births were eliminated--an unlikely scenario. The discrepancy in reduced welfare costs occurs because women who experience their first birth when they are 20 or older still have some probability of receiing welfare. Therefore, both figures might be calculated, but used for different purposes.

The St. Louis report provides the reader with much more information about teenage sexual activity, pregnancy, pregnancy resolution, childbearing, marriage and separation, and decreased educational attainment than is contained in the cost calculations. It gives an overview of issues involved in teenage childbearing using national accounts, illustrated with local data where these are available. By doing this it can serve as a "primer" in the issues and consequences of teenage childbearing for local decision makers.

Single Year Estimates

Title: "Research on the Societal Consequences of Adolescent Childbearing: Welfare Costs at the Local Level." Final report on NICHD Contract No. NO1-HD-02838. Washington, D.C.: Bokonon Systems, Inc., 1981. (92 pages, plus appendices)
Author(s): A. Harvey Block and Susan Dubin
Jurisdiction: Monroe County, New York (Rochester)
Data Sources and Year(s): 1977 and 1978 county data on all public assistance payments to cases open at any time during those 2 years.

Single Year Costs:

1977:	first-birth-as-teen families:	$26.3 million; $5,083 per case
	no-teen-birth families:	$17.5 million; $4,900 per case
1978:	first-birth-as-teen families:	$24.0 million; $5,533 per case
	no-teen-birth families:	$15.5 million; $5,127 per case

This study took advantage of Monroe County's highly automated public assistance data system to make estimates of single year costs attributable to teenage childbearing for the 2 years 1977 and 1978. During those 2 years 11,500 families, with an average 2.5 children

each, had open cases with the Monroe County Department of Social Services, the vast bulk of which (81 percent) were AFDC cases. 7,021 families appear in both years, suggesting long-term or recurrent welfare dependency. This also means that 4,479 families appear on the public assistance rolls during only one of the 2 years, suggesting only short-term dependency.

Families begun by a first birth to a teenager comprised 56 percent of the public assistance caseload (59 percent of the AFDC caseload), and absorbed 60 percent of the cost for public welfare programs. They had slightly more children, on the average, than no-teen-birth families (2.6 vs. 2.3 children). Five percent of welfare families were multi-unit families--that is, the youngest family member was the grandchild, rather than the child, of the head of household, and all three generations comprised a single welfare case.

Despite encountering some data missing from the computerized system (case and individual identification numbers were not entered on all transactions) the researchers were able to calculate public assistance costs separately for families begun by a teen birth, and for families in which the first birth occurred when the mother was 20 or older. These costs include AFDC payments, Medicaid, single issue, emergency and vendor payments, and estimated food stamp costs. 1977 costs for families begun by a teen birth totaled $26.3 million, while no-teen-birth families absorbed $17.5 million in public outlays. Per case costs in 1977 were $5,083 and $4,900 respectively, with the slightly larger families of teenage parents accounting for the difference. 1978 costs were $24.0 million ($5,533/case) for families begun by a teen birth, and $15.4 million ($5,127) for no-teen-birth families.

The foregoing comparison may imply to some readers that families begun by a teen birth and families begun by a later birth absorb almost the same amount of public funds. After all, a 60/40 ratio does not seem so extreme. This impression is misleading. To provide an accurate comparison, per case public expenditures would have to be weighted by the probability that any household of that type would become an AFDC case. According to Moore (1978, Table 2), households begun by a teen birth have a 1 in 4 probability of receiving AFDC, whereas households begun by a later birth have a 1 in 10 probability of receiving AFDC. Applying these ratios to the Monroe County per case costs, the average public expenditure in 1977 for a first-birth-as-teen household would be $1,271 (multiply $5,083 by .25), but the average public expenditure in 1977 for a no-teen-birth household would be only $490 (multiply $4,900 by .10). Public expenditures are thus 2.6 times as high for households begun by a teen birth as for other households.

An important contribution of this study is its detailing of costs to non-AFDC families. These turned out to be so small, in comparison to payments to AFDC families, that future studies can justifiably ignore them. Non-AFDC families received only 2 percent of the total public assistance outlays for 1977 and 1978.

Another component of public costs revealed by this study is outlays for emergency, single issue and vendor payments (e.g., for day care, special counseling, WIN training) for AFDC families, over and above the basic AFDC grant, Medicaid and food stamps. In Monroe County this figure amounted to approximately 12 percent of the total outlay for AFDC families, and 13 percent of the combined cost of AFDC (basic grant), Medicaid and food stamps. Jurisdictions vary widely in their use of emergency, single issue and vendor payments. Some jurisdictions never use these "extras"--an AFDC family gets only its basic grant, regardless of circumstances. Other jurisdictions use special payments to a greater or lesser extent. Future efforts to estimate public costs might want to use these figures to adjust a basic estimate, if the jurisdiction for which costs are being calculated makes significant use of special payments to AFDC families.

This report contains many other elaborate analyses comparing the costs incurred for families begun by a teen birth and families for whom childbearing was delayed beyond the teen years. They are potentially interesting to the specialist, but probably not to the lay reader who wants just the basic cost information.

Title: "Teenage Pregnancy and Teenage Parenthood in Illinois: 1979-1983 Costs." Evanston, IL: Northwestern University, Center for Health Services and Policy Research, 1984. (131 pages)
Author(s): Janet Reis
Jurisdiction: Illinois
Data Sources and Year(s): estimates for probabilities for 68 cost items were taken from 14 state or national sources; estimates for cost, and distribution of cost among state, federal, local governments, businesses and private individuals were taken from 9 local and state sources, both public and private. All costs are translated into 1983 dollars. Costs for teen births in the years 1979-1983 were estimated.
Single Year Cost (total cost, both public and private): $853 million in 1983 dollars for births to teens that occurred only during the 5 year period 1979-1983. Costs include all costs incurred through 1983 of the five birth cohorts born in the years 1979-1983 (i.e., 5 years of costs for 1979 babies, 4 years of costs for 1980 babies, etc.). Of this amount, $425 million is public expenditure, financed through taxation to private individuals and businesses. Businesses are estimated to pay an additional $72 million; private individuals pay the difference ($356 million).

This is an ambitious study, departing in many ways from the conceptualizations, purposes and methodologies used in any other study reviewed in this paper. Major points of departure are:

- Inclusion of all costs of raising children, whether borne by private individuals, businesses or governments. This makes the cost estimates much closer to the "cost of kinds" research (see Espenshade, 1984) than to other studies of the costs of teenage childbearing.

- Estimates of costs to businesses, other than the business share of the tax burden for public costs.

- Inflation of costs estimates for services receiving full or partial federal government support by 21 percent, to compensate for what the author calls the federal income tax penalty--the fact that Illinois citizens pay federal taxes, but don't see all those taxes coming back to the state.

- Inclusion of elements of both "single year cost" methodologies and "single birth cost" and "single cohort cost" methodologies in the same study (which makes comparing cost figures from this study with those of any other study very difficult).

- Recommendations for programs to reduce teen births, and estimates of the cost savings these programs would generate.

Private as Well as Public Cost of Children

It takes a lot of money to raise children. For most children, their parents pay the expenses of raising them, both in direct cash outlays and in opportunity costs (Espenshade, 1984). Rich people spend more to raise their children than poor people, therefore in this context rich people's children "cost" more than poor people's children. Businesses pay their share, too, through insurance for employees and their families, through taxes for schools and other services for children, through the cost of crimes committed by children, and so on. The higher the employee's salary, the greater the probable contribution of the employer to the welfare of the employee's children. Children require expenditures whether or not they are born to teenage mothers. While there is nothing intrinsically wrong with trying to estimate the total expenditures for children, public or private, estimates of the total cost of teenage childbearing are better done in the framework of marginal costs.1

Combining public and private expenditures for children appears very confusing from a policy perspective, because the technique produces an estimate of total cost that will increase as the population improves its economic situation (to which reduced teenage childbearing is predicted to contribute), because economically better-off families will spend more on their children. Yet the public share of this increasing total will shrink, due to decreased reliance on public welfare among more economically viable families. The public focus remains the principle concern of policy makers, and studies of cost would best serve both public and other purposes by keeping the distinction between public and private costs clear.

Adding to the inflated cost estimate derived from full vs. marginal cost is the researcher's assumption that if a birth does not happen to a teenager, it will never happen at all, and therefore all the cost

will be saved. Most of these births will merely be delayed--an important accomplishment, because it gives teenagers more chance to complete their education and develop the skills necessary for self-sufficiency, but still, the delayed births will eventually happen, and will have costs associated with them (Wertheimer and Moore, 1982, Table 20). Businesses and private individuals will hopefully bear a greater proportion of these costs than of the costs for teenage childbearing, because far fewer later childbearers require public support. Failure to use marginal rather than full cost calculations and to take account of delayed births also greatly inflates the estimated benefit (cost savings) to be gained from programs that would reduce teenage pregnancies.

The Bottom Line--What Does $853 Million Mean?

The $853 million in 1984 figure developed by this study is not comparable, on a state level, either to Wertheimer and Moore's (1982) single year cost or to SRI's single cohort cost. Included in the $853 million are all costs incurred through 1984 of the five birth cohorts born in the years 1979-1983. Thus 5 years of costs are included for the babies born in 1979, 4 years of costs for the babies born in 1980, and so on. Although the report gives both unit costs and estimates of utilization for many health and other services, nowhere does it add up all costs in a way that lets the reader understand what factors went into the final number. There is considerable confusion in the report as to which numbers are 1-year/five-cohort costs, which are 5-year/one-cohort costs, etc. Also, for unique events (e.g., hospitalizations), it is unclear whether they should be assumed to occur only once in each child's lifetime, or several times, and to which year(s) their costs should be attributed.

Likelihood and Cost of Health Events

Despite the difficulties which lead this reviewer to question the total dollar figure proposed by this report, it does make a very helpful contribution to the literature on the consequences of teenage childbearing. It provides estimates of the incidence and prevalence of a wide range of health events (and their associated costs) often associated with the children of teenage parents. Probability of occurrence among teenage births for low birth weight and very low birth weight infants, for many later conditions associated with low birth weight babies, and for significant illnesses and injuries are summarized, based on data from many different research reports. It also estimates the proportion of child protective services cases that involve children born to teenagers, and the utilization of in-home supportive services and foster care for these children; utilization of WIC, job training and special services for teen mothers; and participation in family life education and family planning services. Anyone desiring to include costs for these health events in a local estimate of the costs of teen-

age childbearing would profit from reviewing pages 57-61 of this report, where these probabilities are summarized and applied to Illinois population data.

ISSUES AND RECOMMENDATIONS

Which Teenagers?

The issue here is, should births to all teenagers be included, or just births to unmarrird teens? The recommendation is to include births to all teenagers (as all studies reviewed in this paper do). Teenage mothers, whether they marry or not, have a statistically higher probability of receiving welfare at some time in their lives than women who delay childbearing. Loss of schooling and higher subsequent fertility accompany all teenage childbearing, not just that to unmarried teens; these factors reduce the mother's ability to support herself. Public sector costs are associated with all children born to teens.

Which Babies?

The issue here is, should the base consist only of first births when calculating single birth cost and single cohort cost (counting subsequent births as additional costs associated with a "career" begun by the first birth)? Or, should the base consist of all births during a given year (for example, 22 percent of all births to teenagers in 1983 were second or higher order births)? The recommendation is to use only first births as the base. Probabilities for subsequent births should be calculated, depending on the age of the mother at first birth, and the costs associated with subsequent births should be added to the cost of the first birth in calculating the cost of the first birth over the 20-year period during which costs are projected. This approach focuses on the teenager, assuming that every teen has a childbearing career that may or may not begin in adolescence. A first birth in adolescence triggers a chain of events, some of which entail public cost. Second and higher order births are part of that chain of events, in which an early first birth increases the probability of subsequent fertility.

Discounting

The issue here is, is a dollar tomorrow worth a dollar today? The answer is "no" -- today's dollar, if not spent today but rather invested, will be worth more tomorrow. Discounting takes this economic fact into consideration, and deflates projected future costs by the amount a dollar invested today could earn (compounded, minus inflation) by the time it is needed to cover the future cost of supporting babies born to teenagers. The recommendation is to use discounting when projecting costs into the future. This is only relevant when calculating single birth and single cohort cost. It does not apply to single year

cost, where presumably the outlay occurs in the present (for whichever year one is making the estimate), and the present value of a dollar is the appropriate figure to use.

Marginal vs. Full Cost

The issue here is, should one calculate how much births to teenagers actually cost the public, or should one calculate how much more a teen birth costs the public than a later birth? The issue arises because later childbearers still have some likelihood of receiving public support (1 in 10, according to Moore, 1978). It is also relevant to cost-benefit calculations, because even the best interventions are likely only to delay a teen birth, not prevent it entirely; to calculate the benefit of that delay is to calculate a marginal cost.

The recommendation is to calculate both costs. The full cost of a teen birth is an important figure, because it tells now much actual cash outlay the public will incur both now and in the future. The marginal cost of a teen birth is an important figure, because it reveals how much extra a teen birth costs the public, over and above the costs of a later birth. This figure will not be quite so large, but will present a more realistic picture of what the public would save if the birth were delayed. Wertheimer and Moore (1982) estimate that a 50 percent reduction in births to teenagers (19 or younger) would reduce the 1990 single year public costs by 20 percent. Totally eliminating childbearing to unmarried women 17 or younger would reduce 1990 costs by 17 percent; and a 50 reduction in births to young women aged 17 or younger would reduce 1990 costs by 10 percent. Clearly there is no one-to-one relationship between teenage childbearing and public cost, both because, as in reality, teen births in these simulations are mostly delayed, not eliminated, and because factors associated with poverty still characterize many teenagers even when the computer simulation artificially prevents them from having births. These factors eventually affect some proportion of teenagers in the model, leading to public dependency. The marginal cost is thus a very important figure to calculate.

It is not easy, however, to find an adequate way to estimate what proportion of the cost would be marginal. After considering several options, the recommendation is to use 40 percent of the full cost as the "extra" or marginal cost associated with a teen birth as opposed to a non-teen birth. That is, the public could expect to save 40 percent by eliminating teen births totally. This figure is developed by doubling the 20 percent savings estimated by Wertheimer and Moore (1982) to be achieved by a 50 percent reduction in births to mothers under 20 (i.e., assume no births to teens and double the savings).

How Many Years to Project?

The issue here is, how many years is the teenager a potential recipient of public support following the birth of her first child? This is, once again, an issue of the teenager's career, rather than the future of any given baby. The base number of years would be 18, representing the age at which a child born to a teenager would no longer be a minor, and would no longer be eligible for welfare. SRI used 20 years, presumably because subsequent fertility known to be associated with teen births (50 percent repeat pregnancies within 2 years of a first birth) suggests the possibility of public support through the childhood and adolescence of more than one child.

The recommendation is to use 20 years, but using fewer years would be acceptable, provided that good reasons for doing so exist, and that the number of years used in the calculations is always clear. One might, for example, use the first 10 years after the first birth, both because most medical costs occur in those years, and because the probability of receiving welfare diminishes in the second decade after a teen birth.

Which Public Costs?

The issue here is, which of the many possible public programs used by households begun by a teen birth are the most important ones to include in cost estimates? The recommendation is contingent. The clear "musts" are AFDC, Medicaid and food stamps, which constitute the largest public programs reaching the greatest number of household. After these "big three," inclusion of other costs will depend on the availability of data and the researcher's conviction of the magnitude of the cost or the policy importance of the service. To review a few of the additional costs calculated in the studies just described, potentially important costs include: (1) emergency, single issue and vendor payments for AFDC households; (2) social services; (3) job training; (4) housing.

The Monroe County study found that emergency, single issue and vendor payments amounted to 13 percent of the combined cost of AFDC, Medicaid and food stamps. If local jurisdictions make moderate or heavy use of this type of supplemental payment to AFDC households, a researcher estimating costs for that jurisdiction might want to adjust for this type of outlay.

Social services means many different things in the studies reviewed here. In the Illinois study, "social services" meant special teen pregnancy and parenting programs, and comprised a tiny proportion of total estimated costs. In the Charlotte-Mecklenburg County study, it meant day care and school lunch programs. Social services are part of SRI's calculations and amount to 15 percent of single birth or single cohort cost, but the report does not define what services are included

in the term. The illinois study calculated separately the cost of child protective services and foster care, some part of which are often considered social services. The St. Louis study simply used a factor of 5 percent of welfare costs, without trying to develop estimates based on agency data. The author (Walentik) mentioned a U.S. Senate committee estimate of 2 percent for (undefined) social services, and picked 5 percent as a conservative compromise between 2 percent and SRI's 15 percent.

Foster care for the children of teen parents is potentially a very costly item, and local studies may want to include it in estimates of single year costs. For these estimates, all data needed are contained in budget or expenditure documents for the year(s) in question. The Illinois study reviewed here cites an Illinois Department of Children and Family Services estimate that 20 percent of child abuse and neglect referrals involved parents aged 19 or younger; 9 percent of these referrals resulted in foster home placement every year, at a cost of $4,800 each, per year. Looked at from another perspective, New York estimated that at least 20 perent of the children in the state's foster care system were born to adolescent mothers (New York State Temporary Commission to Revise the Social Services Law, 1983, p. 74).

However, the data necessary to include foster care costs as part of single birth or single cohort costs does <u>not</u> exist, because we do not have enough evidence of the probability that a given teen mother will have a child removed from her custody. We cannot therefore assign an expected value of the cost of foster care to a single individual over a 20 year period. To do that we would need both the cost of the care, <u>and</u> the probability that she would need to use it.

Job training and housing costs for households begun by a teen birth were included in some studies. Job training is costly, but it is usually a single year cost, and a very high proportion of teen parents do not receive it. Housing costs have been calculated based on the proportion of public housing units occupied by households begun by a teen birth (5 percent--SRI and St. Louis studies). Housing costs were between 1 and 2 percent of total costs in these two studies. While these costs are relevant, rent subsidies for existing private housing units are also relevant, and may involve as much or more public outlay. Neither cost may be worth actually calculating from agency data (as opposed to making some assumptions about their magnitude).

Private Costs--Why or Why Not?

Of the studies reviewed here, only the Illinois study attempted to calculate private as well as public cost. The discussion of that study spelled out the arguments for and against including private cost (especially total as opposed to marginal private cost) in studies designed to reflect the impact of teenage childbearing. Much depends on one's purpose in undertaking the study. Overall, most jurisdictions will

probably be more interested in the public cost figures, and these are certainly easier to develop. If estimates of private cost are desired, see the discussion of the Illinois study for some of the premises under which one should make such estimates.

SUMMARY OF PART I

Part I of this paper has reviewed six studies (two national and four local) that estimated costs for teenage childbearing. Three studies made 20-year projections of the public cost of a single teen birth, and of the cohort of teen births from a single year. Two studies estimated the public cost incurred during a single year that was attributable to teenage childbearing, whatever the current age of the mother. One study estimated the total cost, public and private, through 1983 of all babies born to teenagers in 1979-1983. The most easily comparable estimates from these studies are for single birth costs: the range is from $13,852 to $18,710 in public cost, over the 20 years from the time a woman experiences a first birth as a teenager.

For jurisdictions interested in determining their own outlays for teenage childbearing, these groundbreaking studies have contributed a great deal to our ability to recommend reasonably straightforward techniques to use. None of the studies reviewed is "perfect," but each raises important methodological issues. Taken as a body of research, they provide important knowledge (e.g., teenage childbearing accounts for 50-56 percent of AFDC caseloads; marginal savings for delaying teen births is 40 percent of full cost) that local jurisdictions can simply "plug in" to a formula to calculate their own costs.

These studies also provide the basis for making methodological recommendations. Our recommendations can be readily summarized as follows:

- Use all teenagers, whether married or not;
- Use only teenagers experiencing a first birth (subsequent births should be treated as part of the cost of that teen's childbearing career).
- When calculating single birth or single cohort cost discount, future year costs;
- Calculate both full and marginal cost;
- Use a 20-year projection for single birth and single cohort cost;
- AFDC, food stamp and Medicaid costs are the "big three" to include in all estimates. Other public costs can be included by estmates or by percentages of AFDC cost, or when local conditions suggest that they are important and the cost figures are available for inclusion.

PART II

INTRODUCTION: PUBLIC COST ESTIMATES FOR 1985, AND FOR THE 1985 FIRST BIRTH COHORT

Part II presents cost estimates for the three types of public costs described in Part I:

- The single year public cost attributable to teenage childbearing in 1985;
- The single birth public cost of a family begun by a single first birth to a teenager in 1985, projected over the 20 years 1985-2004;
- The single cohort public cost of all such families begun by first births to teenagers in 1985, projected over the 20 years 1985-2004.

Cost estimates always rest on a set of assumptions, and are only as good as their assumptions. The rest of Part II presents two types of estimates: single year per public cost estimates and single birth/single cohort public cost estimates. Each presentation has three sections: (1) the tabular statement of the cost estimate; (2) a brief comparison of the estimate with earlier estimates, noting possible reasons for differences where these exist; and (3) the assumptions on which the estimate rests.

1985 SINGLE YEAR PUBLIC COST ESTIMATE

Table 2 presents the estimate of 1985 public outlays attributable to teenage childbearing. This estimate, of $16.65 billion in 1985, could also be presented as a range of $15.70 to $18.84 billion, depending on whether one used 50 percent, 53 percent or 60 percent of welfare expenditures as the proportion attributable to teenage childbearing (see footnote, Table 2). The figures in Table 2 include both direct payments to individuals and the administrative costs of the three programs. If administrative costs were excluded, the estimate would be $15.08 billion.

Probably the only comparison possible for this estimate is the 1975 Wertheimer and Moore figure of $8.55 billion, inflated to 1985 equivalency by different methods. (This figure of $8.55 billion does not include administrative costs, which would add another $0.88 billion.) Inflating $8.55 billion 1975 dollars to 1985 equivalents using the OMB deflator, which incorporates actual inflation rates, yields an estimate of $16.33 billion ($18.01 billion with administrative costs added). This method probably overestimates public expenditures for the programs that serve teenage mothers, which have not always been allowed to rise with inflation.

TABLE 2 Estimate of Public Outlays in 1985 Attributable to Teenage Childbearing (1985 single year cost, in billions)

Funding Source	Total Outlay for AFDC Recipients1	Outlay Attributable to Teenage Childbearing2
AFDC	15.69	8.32
Food Stamps	6.45	3.42
Medicaid	9.26	4.91
Total for Teenage Childbearing		16.65

1 Includes administrative costs.
2 Based on the assumption that families begun by a teen birth consume 53 percent of these funding streams. This assumption is conservative, since several studies, summarized in Wertheimer and Moore (1982, Tables 2 and 4), produce estimates ranging from 50 percent to 60 percent (and higher if only women 30 or younger are considered).

Inflating $8.55 billion 1975 dollars using a factor of 1.79, which is the 1975-1985 actual growth in per-recipient AFDC average monthly payments, yields an estimat of $15.34 billion, which compares well with the author's estimate, excluding administrative costs, of $15.08 billion for 1985. Medicaid expenditures grew at a faster rate than did AFDC outlays, so this is probably a conservative estimate. Thus the figure estimated in Table 2 appears to be well within the bounds of probability compared to other ways of estimating the same expenditures.

It should be noted that the figure of $16.65 billion is conservative, since it includes only the sums expended in the three major programs. Not included in this figure are other services more likely to be used by families begun by a teen birth than by other families, such as publicly supported social services, housing, special educational services, and child protective services and foster care. Many of these figures are not available nationally, and may not be available locally. $16.65 is thus a minimum figure.

Sources and Assumptions for 1985 Single Year Public Cost Estimate

AFDC expenditures: U..S. Budget, 1986, estimate for 1985 expenditures. Appendix, p. I-K35. Includes administrative expenses.
Food stamp expenditures: Committee on Ways and Means, U.S. House of Representatives, Committee Print 99-2 (referred to hereafter as

WMCP), Appendix 6, Table 1. $42.80 average payment per individual in 1984, increased by 2 percent to $43.66 for 1985. Administrative expenses of 12 percent added (WMCP, Appendix G, Table 1). Multiplied by the estimated number of Medicaid recipients who were on AFDC in 1985 (WMCP, Appendix E, Table 2). Then adjusted for a 75 percent participation rate of AFDC households in the food stamp program (WMCP, Section 8, Table 18).

Medicaid expenditures: 5,381,000 AFDC adults and 9,285,000 AFDC children (WMCP, Appendix E, Table 2) multiplied by $889 per AFDC adult and $435 per AFDC child, average Medicaid expenditure. The average expenditure figures were derived by using 1984 average figures of $847 and $414 (Medicaid Hotline) and inflating them by 5 percent. Administrative expenses of 5 percent were added, based on ecent actual experience (U.S. Budget, 1986; Appendix, p. I-K27).

Inflation adjustments:

AFDC -- not needed.

Food stamps -- Per recipient food stamp allocations are indexed to the food component of the Consumer Price Index, and average around 2-3 percent per year. Using 2 percent as the factor for inflating the 1984 average per-recipient figure to a 1985 figure is thus conservative.

Medicaid: -- The CPI for hospital-based medical care (in-patient and out-patient combined) has increased an average of 11.6 percent per year over the past 8 years. Medicaid expenditures have increased an average of 12.1 percent per year during the same period (WMCP, Appendix E, Table 1). This same source estimates a 12.7 percent increase between 1984 and 1985. However, these figures include all hospital and Medicaid users, among whom the elderly, non-AFDC individuals are probably responsible for a disproportionate share of the increase in expenses. In light of all this, using a 5 percent inflation factor seems reasonable, and conservative.

SINGLE BIRTH AND SINGLE COHORT COST ESTIMATES FOR FIRST BIRTHS TO TEENAGERS IN 1985

Table 3 presents the estimates of the full cost of public outlays over the 20 year period 1985-2004, for a single family begun by a first birth to a teenager in 1985 (single birth cost of $13,902), and for all families begun by first births to teenagers in 1985 (single cohort cost of $5.16 billion). It also presents the potential savings to the public if all teen births could be delayed until the mother was 20 or older. Potential savings, at $5,560 for a single birth and $2.06 billion for the cohort, are only 40 percent of full cost, reflecting the fact that even with delayed births, many women still have some probability of receiving welfare.

This single birth full cost estimate of $13,902 can be compared to SRI International's (1979) $18,710 for a first birth in 1979, to Walentik's (1983) $17,675 for a first birth in St. Louis in 1981, and to Mecklenburg Council on Adolescent Pregnancy's (n.d.) $13,852 for a

TABLE 3 Public Cost of First Births to Teenagers in 1985, and Potential Savings Associated with Delaying these Births1

	Age at First Birth			
	15	15-17	18-19	All Teens
First Births2	9,638	144,308	217,185	371,131
Single Birth				
Full Cost	17,724	17,689	11,214	13,902
Potential Savings3	7,089	7,076	4,485	5,560
20-year Single Cohort				
Full Cost (in billions)	.17	2.55	2.44	5.16
Potential Savings (in billions)	.07	1.02	0.97	2.06

1 Twenty year projection, covering the years 1985-2004. Cost is expressed in 1985 "present value" dollars, which means that this is the amount that would have to be set aside in 1985 to cover the 20 year cost of families begun by first birth to a teenager after taking into consideration inflation and the future earning power of a dollar invested in 1985.
2 1984 natality statistics were the latest available. The same numbers have been used in the 1985 estimates shown in this table.
3 Calculated at 40 percent of full cost.

first birth in Mecklenburg County, NC in 1979. All other things being equal, one would have expected the 1985 estimate to be higher than any of these earlier estimates, simply due to inflation. The major reason for reduced cost is a reduced probability of receiving welfare (see below for an explanation of why this occurred). Thus, changes in the availability of welfare support make a substantial difference in the long-term fiscal consequences of teenage childbearing.

A Comparison Figure: Continuous Welfare Dependency

Many people may be surprised that the single birth cost of $13,902 is so low. As explained above, the methodology used to reach this figure was based on all teenagers having a first birth. Many of these teenagers, either as teens or as older women, never go on welfare, or else they depend on welfare for relatively short periods of time (e.g., less than 2 years). This reality contradicts the popular perception that having a baby as a teenager dooms the resulting family to immediate and continuous welfare dependency. For many teenagers, such dependency does not happen.

Nevertheless, what many people want to know is, "How much does a family begun by a teen birth cost the public when it is continuously dependent on welfare?" One can develop this comparison projection using a simple modification of the methodology used to arrive at the $13,902 figure. As always, this comparison projection rests on certain assumptions which, if changed, would change the final result.

Let us assume:

1. A teenager 14 or younger, who has a first birth; immediately receives welfare for her baby and for subsequent babies; also gets welfare for herself once she becomes an independent head of household; and stays on welfare continously for 10 years;

2. A teenager 15-17, who has a first birth; immediately receives welfare for her baby and for subsequent babies; also gets welfare for herself once she becomes andindependent head of household; and stays on welfare continuously for 7.5 years;

3. A teenager 18-19, who has a first birth, immediately receives welfare for her baby and for subsequent babies; also gets welfare for herself once she becomes an independent head of household; and stays on welfare continuously for 5 years.

Discounting public costs in the same way we did for the basic 20-year projection, we arrive at the following figures: the 14 year old would cost the public $46,456 over the assumed 10 year period of welfare dependency; the 15-17 year old would cost the public $44,201 over the assumed 7.5 year period of welfare dependency; and the 18 to 19 year-old would cost the public $30,955 over the assumed 5 year period of welfare dependency. Averaging these results--after weighting the figures for the numbers of 14 year olds, 15-17 year olds and 18-19 year olds experiencing a first birth--one arrives at an average, discounted figure of $36,502 for a teenager giving birth for the first time and immediately beginning an extended period of continuous welfare dependency (as described in our assumptions).

This figure of $36,502 may strike many readers as more "reasonable" than the earlier figure of $13,902 that is, as more in line with their

expectations. As noted above, however, it is true only for those teenagers who actually do use welfare immediately and continuously. Such teenagers do not represent the majority of teenagers having children.

SOURCES AND ASSUMPTIONS FOR SINGLE BIRTH AND SINGLE COHORT PUBLIC COST ESTIMATES

The approach used was, first, to estimate the cost for a single family begun by a first birth to a teenager in 1985, projected over the 20 year period 1985-2004, and then to multiply that estimate by the number of first births to teens in 1985 to get the cohort cost estimate. Following the SRI methodology, cost was estimated separately for teenagers experiencing their first birth at age 14 or younger, at age 15-17, and age 18-19, order to reflect the very different health and dependency risks entailed by births at these different ages.

Basic Assumptions--Completed Family Size

Since a 20 year projection traces a teenager's childbearing career from the time of her first birth, counting subsequent children (and their associated cost) as part of the cost of an initial teen birth, some assumption about the number and timing of subsequent births is necessary. Wertheimer and Moore's (1982, Table 20) estimates were used for this purpose. These estimates are that teens who had their first baby at 17 or younger would have 2.1 children by age 22, 2.8 children by age 27, and 3.2 children by age 32. Teens whose first child was born when they were 18 or 19 would have 1.6 children by age 22, 2.4 by age 27, and 2.8 by age 32. These figures were used to calculate annual average increases in family size, which in turn were used when calculating the number of household members eligible for AFDC, food stamp and Medicaid support, and when to add extra medical expenses associated wth pregnancy and childbearing.

Basic Assumptions -- Probability of Receiving Welfare

For teenagers (age 19 or younger), the probability used is .34 (Moore, 1978). The rest of the probabilities come from Wertheimer and Moore (1982, Table 41-A, Baseline scenario), which does not estimate the probability for teenagers. For women whose first child was born when they were 17 or younger, these probabilities are: .20 when they are 20-24; .16 when they are 25-29; .02 when they reach age 30 and older. For women 18 or 19 at first birth, the probabilities are: .15 when they are 20-24; .09 when they are 25-29; and .03 when they are 30 and older.

Applying these probabilities is quite straightforward if one is estimating costs only for 18 year olds, or only for 15 year olds. However, the methodology used in this paper combines teenagers of different ages together and estimates costs for 15-17 year olds and for 18-19

year olds. This approach requires some adjustments in the "transition years." For example, among 15-17 year olds, in the third year of the projection, when the 17 year olds have turned 20 (and thus would be subject to a probability of welfare receipt of .20), the teens who were initially 15 and 16 years old are only 18 and 19, respectively (and thus the .34 probability of welfare receipt is stil applicable to them). Therefore, the probability of welfare receipt used for the third year of the projection will be the average of the probabilities for each age, weighted by the proportion of the larger group (15-17 year olds) who are each age (i.e., 15, or 16, or 17). The same sort of adjustment must be made for each year that part of the group is old enough for the next applicable probability, but part of the group is not.

In the years of the projection when women are 20 and older, these probabilities are lower (by 4-15 percent, depending on the woman's age and age at first birth) than those used by SRI and the other studies using the SRI method, because the estimates incorporate the more restrictive welfare eligibility criteria required by the Omnibus Budget Reconciliation Act of 1981. The biggest difference made by these new criteria involves the amount a head of household could earn and still retain her eligibility for AFDC and Medicaid. When the stricter criteria took effect in 1982, this amount was reduced significantly, and many households receiving some income through earnings were removed from the AFDC rolls. In the present calculations, the changes in eligibility requirements for AFDC affect the estimate of total cost and the estimate of marginal savings.

Basic Assumptions--Number of First Births to Teenagers

9,638 first births to girls 14 and younger, 144,308 first births to 15-17 year olds, and 217,185 first births to 18-19 year olds. These figures are taken from 1984 natality data (NCHS, 1986, Table 2). 1984 data are the latest available, and 1985 figures have been assumed to be similar.

Basic Assumptions--Inflation and Discount Rates

Inflation is assumed to average 5 percent per year over the 20 years involved in these projections. Money invested in 1985 is assumed to grow at a real interest rate (after accounting for inflation) of 4 percent per year, compounded annually. Thus 4 percent is used as the discount rate. This practice follows the discounting example of SRI International (1979).

Basic Assumptions--Potential Savings

The potential savings from reducing or eliminating teenage childbearing is assumed to be 40 percent of the full public cost of teenage childbearing. This figure (40 percent) is derived from Wertheimer and Moore (1982), who used dynamic simulation techniques to estimate the probable effect on welfare expenditures of several scenarios related to teenage childbearing. The greatest savings (20 percent) were achieved under a scenario in which births to women under 20 were reduced by half. Double savings (i.e., 40 percent rather than 20 percent) are assumed to result from doubling the reduction in teenage childbearing (from a 50 percent reduction to a 100 percent reduction).

Cost Data

AFDC cost: $113 per recipient per month, estimated for 1985 (WMCP, Section 8, Table 17). The same source indicates an anticipated 1.8 percent annual increase in the benefit per recipient. Since inflation is assumed to be 5 percent per year, this means that the value of the AFDC benefit loses ground to inflation at a rate of 3.2 percent per year. Its value has been reduced appropriately for the years 1986-2004.

Food stamp cost: $42.80 per recipient per month in 1984 (WMCP, Appendix G, Table 1). Assumed to rise 2 percent per year (actual increase indexed to the food component of the Consumer Price Index), therefore the 1985 figure used was $43.66. For years following 1985, the per recipient cost was reduced by 3 percent per year (5 percent inflation minus 2 percent increase in food stamp allocation). All adjusted for 12 percent administrative costs, and for a 75 percent participation rate of AFDC households in the food stamp program (WMCP, Appendix G, Table 1 and Section 8, Table 18).

Annual Medicaid cost: 1984 was the latest year for which figures were available from the Medicaid Hotline (Social Security Administration), which summarizes the states' annual 20-A-2 reports and gives information over the telephone. Each AFDC child cost Medicaid $414 in 1984, while each AFDC adult cost Medicaid $847. These figures have been increased to $435 and $889 for 1985, based on an assumption of a 5 percent increase in Medicaid outlays. As explained in relation to Table 2, this is a conservative assumption, since real medical costs, and Medicaid costs, have been increasing an average of 8-12 percent per year. The 5 percent inflation rate and the 5 percent increase in medical cost outlays cancel each other out, so $435 and $889 will be used as Medicaid cost outlays for all 20 years of the present projections.

Medicaid costs associated with births: These calculations used $3,107 as the cost borne by Medicaid (including prenatal care costs) for

birth to a teenager 14 or younger; $2,867 as the cost for 15-17 year olds; $2,397 as the cost for 18-19 year olds, and $2,446 as the cost for women 20 and older. These figures are an average of costs estimated by three different studies: Walentik (1983); Wertheimer and Moore (1982, Appendix B); and Burt et al. (1984). These costs were multiplied by the probability of a birth to produce the birth cost associated with each year of the 20 year projection.

Social services cost: Was assumed to be 5 percent of AFDC cost, following Walentik's (1983) logic and example.

Public housing cost: Was assumed to be 2 percent of AFDC cost, following Walentik's (1983) and SRI International's (1979) examples.

AFDC/food stamp/Medicaid administrative cost: AFDC and food stamp administrative costs were calculated using 12 percent of direct benefits, based on historical precedent. Medicaid administrative costs were calculated at 5 percent of benefits, also based on historical data.

USING THE COSTS IN BENEFIT-COST ANALYSIS2

The public costs of teenage childbearing are rarely calculated as ends in themselves. Typically they are gathered to bolster the argument for preventive programs--sex education, counseling, providing contraception, and so on. But which programs should be chosen? From an economic perspective, certain rules apply for making these choices even when budgets are plentiful. Suppose we define the Net Benefits of a program in the following way:

A program's net benefits	=	the dollar value of the program's benefit - the dollar value of the program's costs

No matter how large an agency's budget, no program should be undertaken unless its Net Benefits are positive--i.e., unless the value of its benefits exceeds its costs. When budgets are tight, the problem becomes harder. Now the administrator should select those particular programs that produce the greatest Net Benefits.

While all this sounds fine in theory, in practice it is not so easy. In fact there are no perfect formulas, but it is possible to give some general ideas and numbers that will help administrators to examine their own options.

In most situations, the most defensible perspective to adopt for cost-benefit analysis is the taxpayers's perspective: how many public dollars will this program save? This means that if a program benefit is to be counted, it must be translated into reduced public dollars. Lowering the rate of pregnancy must be translated into reduced welfare

and medical costs. Staying in school longer must be translated into postponements of pregnancy and higher likelihood of employment which must again be translated into reduced welfare and medical costs. And so on. While this strategy may be confining, it provides a consistent way to think about program evaluation.

MEASURING PROGRAM BENEFITS

A typical program does not keep records in terms of "public costs saved." Rather it is likely to generate information of the following kind:

A) When compared to normal expectations (or to a control group) 16 year-old girls were 20% less likely to have a first pregnancy during the year they were in the program.

or, B) When compared to normal expectations (or to a control group), 17 and 18 year-old mothers were 15% less likely to have a second pregnancy during the 18 months following program participation.

How do either of these statements translate into dollar benefits?

Begin with statement (A). Recent estimates by Burt suggest that in 1985, the present discounted value of future public costs associated with a first teenage birth are:

TABLE 4 Present Discounted Value of Future Public Costs Associated with a First Teenage Birth

Age at First Birth	Public Expenditures
15	$18,130
16	$17,851
17	$17,464
18	$12,214
19	$10,671

These costs include assumptions about subsequent births, the likelihood the woman receives AFDC, etc., as explained earlier in this chapter. They reduce with each year a first birth is postponed because of reduced probabilities of receiving welfare, smaller completed family size, and fewer medical complications for later childbearers.

Statement (A) does not say what happens after the year the girls were in the program. We will begin with a conservative interpretation. Suppose that the program only succeeds in postponing the girl's first pregnancy for a year while her total number of children, her chances of completing high school, etc., are the same as those of teenagers not participating in the program. What public costs have been saved?

The answer is straightfoward, but also involves discounting. If the girl had her first child this year, we would be confronted with public costs whose present value totals $17,851. This means that by putting $17,851 in the bank this year, we would generate enough revenue to cover all future costs.

If the girl has her first child next year, at age 17, the same logic holds except that now the process is postponed for a year and we need to deposit $17,464 in the bank for <u>next</u> year to cover all future public costs. With current interest rates at about 7 percent, it follows that to build up the $17,464 for next year, we need to deposit an amount this year, <u>C</u>, which solves the equation:

$$C \times (1.07) = \$17,464 \qquad (1)$$

or

$$C = \frac{17,464}{1.07} = \$16,321 \qquad (2)$$

Thus, if the girl has her first birth this year, (at age 16), we have to commit $17,851 this year to cover future costs. If the girl has her first birth next year, we have to commit $16,321 this year which will grow into $17,464 by next year and will be sufficient at that time to cover the costs. Thus postponing the first birth by one year has saved us $1,530 ($17,851 - $16,321), assuming we really <u>do</u> commit the money <u>this</u> year and actually get a 7 percent rate of interest. To complete the example, if girls in the program are 20 percent less likely to have a first pregnancy during the year they were in the program, then the expected savings per girl is .2 x $1,530 = $306 and if the program is worth any consideration, program costs per participant must be less than this amount.

If we make the same calculations for a postponement from age 16 to 18, or from 17 to 18, we obtain public savings of $7,182 and $6,049, respectively. It is apparent from these data that the biggest savings will be associated with postponing a first birth until 18 or 19 (or even later). A delay from age 16 to age 17 will save $1,530. But a delay from 16 to 18, implying also high school completion, will save $7,182: $12,214 / $(1.07)^2$ = 10,668; $17,851 - $10,668 = $7,182. Even the one-year delay from 17 to 18 is quite "valuable," saving $6,049: $12,214 / 1.07 = $11,415; $17,464 - $11,415 = $6,049. Since many more 17 year olds than 15 year olds give birth, this implies that program efforts will have more payoff in terms of cost effectiveness if they focus on helping 17 year olds delay childbearing for one year.

Turning to statement (B)--the postponement of second pregnancies--we can see that the methodology is the same but the costs are different. The future public costs of moving from one to two children are less than the costs of moving from no children to one. These costs have not been estimated, but the same methodology could be adapted to do so.

SIMPLE BREAK-EVEN ANALYSIS

The previous examples began with a distinct advantage. We knew what impact the program had on postponing pregnancies. In many cases, this information is precisely what we do not know. In this case, a limited analysis is still possible. We cannot do a complete estimation of Net Benefits--that is, the dollar value of benefits less costs. But we can examine the possibility that benefits exceed costs and therefore that the program is worth undertaking at all.

Suppose that we estimate that it costs $16 to have a young woman participate in a series of family life education classes. And suppose (following the discussion above) that we determine the public cost savings of postponing a first pregnancy for a year for a 16 year old is $1,530.

It follows that if the program benefits are to exceed costs, the program must cause at least 1 out of every N participants to postpone a pregnancy where N solves the following equation:

$$\$1{,}530 = N \times \$16$$

or

$$N = 96 \qquad (3)$$

Put differently, if 96 girls participate in the program, the total program costs will be 96 x $16 or $1,536. As long as one of these participants postpones a pregnancy, the savings in public cost will be $1,530. In this case, the program would just break even in terms of net benefits. If more than one participant postpones pregnancy, the Net Benefits are that much larger.

In many situations, this kind of "break-even" analysis may be helpful. For while an administrator may not know a program's precise effectiveness, she or he may have a rough sense of its effectiveness and so may know whether the break-even N, calculated in (3), is at all plausible. For example, if a particular program leads to a break-even N of one postponed pregnancy for every three participants, the administrator may know that such effectiveness is impossible and so the program should not be undertaken. Conversely, if a different program has a break-even N of one postponed pregnancy for every 600 participants, the program administrator may feel that number is quite plausible and this will make the program worth pursuing.

GLOSSARY

Discounting -- Reducing a nominal cost for a future year by the amount that money invested now could earn by that year, adjusting for inflation.

Full Cost -- The actual, or present value, public dollar outlays for families begun by a teen birth, not adjusted for the probability that families begun by births to women 20 or older also have some probability of receiving welfare and other publicly supported services.

Marginal Cost -- The cost to the public of teen births, over and above the costs the public would incur for families begun by a later birth. This marginal cost is thus the full cost of teen births, minus the full cost for later births.

Single Birth Cost -- The cost to the public of the family begun by a single teenage birth, from the pregnancy through the time the baby becomes an adult (20 years, in most calculations).

Single Cohort Cost -- The cost to the public of all such families begun by teenage births in a single year, for the 20 years that the teenage mother and her baby may be dependent on public support. This figure equals the single birth cost multiplied by the number of first births to teenagers in a given year (cohort).

Single Year Cost -- The cost to the public during a single year to support all families begun by a teen birth (although the mother in most cases will no longer be a teenger).

Notes

1 For example, Dillard and Pol (1982) assume tht teenage childbearing results in marginally larger families, less education and poorer earning capacity of teenage mothers. Their estimates of the cost of teenage childbearing, over and above the cost of any childbearing, are based on the extra child the teen mother is likely to have, the opportunity cost associated with not being able to enter the labor force as soon as a mother with fewer children, and the lower wages she will earn when she is in the labor force. This marginal cost turns out to be $37,050 for a poor teenage mother, in addition to the $61,613 cost for a poor mother who did not have a baby as a teenager. This marginal cost, while still substantial, is considerably less than the almost $100,000 that would be implied by using the methodology of the Illinois study.

2 Frank Levy contributed the basic outline and concepts of this section. Burt contributed the estimates for public costs of teenage childbearing.

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STATISTICAL APPENDIX
TRENDS IN ADOLESCENT SEXUAL AND FERTILITY BEHAVIOR

Kristin A. Moore, DeeAnn Wenk, Sandra L. Hofferth,
and Cheryl D. Hayes, editors

The major purpose of this statistical appendix is to provide an integrated and comprehensive source of data on teenage fertility behavior. To date, much of the public data on prevalence of sexual activity by age, sex, race and cohort in the United States, as well as trends in pregnancies, births, abortions, marriage and adoption, have not been available in any single source. Much of the information presented in this statistical appendix was derived from data published by various federal government agencies, including the U.S. Bureau of Census and the National Center for Health Statistics. Much of it is also available in published form from non-governmental surveys. Some of the information presented here was derived from unpublished data made available by both governmental and non-governmental sources.

This statistical appendix is one part of a comprehensive examination of adolescent pregnancy and childbearing conducted by the Panel on Adolescent Pregnancy and Childbearing, under the auspices of the National Research Council's Committee on Child Development Research and Public Policy. The study was supported by a consortium of private foundations, including the Rockefeller Foundation, the Ford Foundation, the Robert Wood Johnson Foundation, the William and Flora Hewlett Foundation, and the Charles Stewart Mott Foundation. Over the two years of the study, the panel conducted a detailed review of data on trends in teenage sexual and fertility behavior, a review and synthesis of research on the antecedents and consequences of adolescent pregnancy and childbearing, and a review of intervention strategies and programs. The statistical appendix was prepared as background for the panel's report and as a reference for policy-makers, researchers, and others seeking information on patterns of sexual and fertility behavior among U.S. teenagers.

This appendix is organized according to the panel's conceptual scheme for understanding adolescent sexual decision making. The process of becoming an adolescent parent, beginning with the initiation of sexual intercourse, involves a series of decision points faced by all adolescents (see Volume I, Chapter 1). Choices (which vary in their degree of conscious decisionmaking) at each successive point in the sequence are dependent on the outcomes of previous choices. The

total number and proportion of adolescents reaching each point in the decision-making process are determined by a variety of social and demographic factors.

The proportion of teenagers who are sexually active and the consistency of contraceptive use are the key factors that affect the probability of pregnancy in the adolescent population. Once a pregnancy occurs, the proportion of teenagers who voluntarily terminate their pregnancy, give birth in- or out-of-wedlock, or relinquish their child for adoption affects the number of teenagers who become parents and the number who become unmarried parents. A change in the size of the adolescent population or in any of these factors will ultimately produce a change in the number of adolescent parents. Thus, it is important to examine recent trends and current levels in the frequencies of an entire range of behaviors in order to understand trends in adolescent pregnancy and childbearing.

Additionally, adolescents are not a monolithic group. Adolescent behavior varies by age, sex, race, ethnicity and socioeconomic characteristics. For this reason, we have endeavored to provide data by age categories (i.e., less than 15 years old, 15 to 17 years old, and 18 to 19 years old) by race and ethnicity, and by sex. In some cases, however, data were not available in the desired form. Often, for example, age categories were inconsistent over time and across sources. Some data were not available by race and ethnicity. Despite these difficulties, we have tried to provide as much information as possible while retaining the ability to make meaningful comparisons of data from different sources and over time. In many cases data for older age groups are presented for comparison with adolescent age groups.

The statistical appendix is organized into eight sections containing tables with brief accompanying summaries. Sections 1 through 4 present data on teenagers at successive points along the path to adolescent pregnancy, including sexual activity, contraceptive use, and premarital pregnancy. Sections 5 through 7 present data on teenagers choosing different resolutions to pregnancy including abortion, marriage, birth, and adoption. The final section contains information on adolescents who became parents.

This appendix is not intended to be analytical. The earlier chapters of Volume II provide a more complete synthesis of the research literature, an assessment of the reliability of the data, and an identification of gaps in available knowledge. The addendum to this volume contains detailed descriptions of the major sources of data used for constructing the tables.

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I. SEXUAL ACTIVITY AMONG ADOLESCENTS

This section presents information on sexual activity among adolescents in the United States. Data are provided on sexual activity among never-married teens and married teens before and after marriage. In most cases the designation of being sexually active pertains to men and women ever having intercourse. Data are also provided on frequency of sexual intercourse, number of premarital sexual partners, location of first intercourse and other factors that may affect the timing of first sexual intercourse among adolescents, such as age at first menstruation.

The data came from three main sources, the National Surveys of Young Women and Men (NSYW/M), the National Longitudinal Surveys of Youth (NLS), and the National Survey of Family Growth (NSFG). The 1979 NSYW/M are for U.S. metropolitan areas only. For this reason the data in Table 1.2 from the 1971 and the 1976 NSYW/M and the 1982 NSFG were adjusted to include metropolitan areas only, in order to present a comparable time series. In subsequent tables for which similar data from the 1982 NSFG were not available, only data from the NSYW/M are presented. Data on young men are only available in the NSYM and the NLS.

The estimates of female sexual activity based on data from the NLS and the NSFG although generally consistent, differ in three respects. First, the age categories for the NSFG are mid-year (i.e., age 15 means 15.5 years) whereas for the NLS data, the age categories extend to the end of a specified age (i.e., age 15 means until the 16th birthday). Second, unless otherwise noted data from the NLS include all women regardless of marital status. Third, Hispanic persons in the NLS data may be of any race (black or white); in the NSFG data, unless otherwise noted black and white totals include Hispanic persons. This means that the race and ethnicity categories are not mutually exclusive. The NSYW/M do not include data on Hispanics.

TABLE 1.1 Proportion Of Women Aged 15 To 19 Beginning Menstruation At Specific Ages, By Race Of Women, 1976 - 19801

Age at First Menstrual Cycle	Proportion of Women, by Race		
	Total	Whites	Blacks
8-10	5.1%	4.6%	7.6%
11	12.7	12.1	17.6
12	29.4	29.6	24.7
13	30.2	31.4	25.8
14	13.1	12.9	14.8
15	5.9	5.8	
16	2.9	2.9	9.5
17+	0.7	0.7	
	100.0	100.0	100.0
Mean Age	12.6	12.7	12.5
N =	2,121	1,767	305

Notes: None of the black-white differences in age at menarche reach accepted levels of statistical significance. The total group includes 49 women of other race groups. Where cell sizes fell below 25, data are grouped in categories.

[1]Data are derived from women's responses to a question in the medical interview, "How old were you when your period or menstrual cycles started? Data were coded in years.

Source: Unpublished tabulation from Ronette Briefel, National Center for Health Statistics, DHHS, Second National Health and Nutrition Examination Survey, 1976 - 1980.

TABLE 1.1

Table 1.1 shows the proportion of women aged 15 to 19 (studied between 1976 and 1980) by age at menarche and race. These data were tabulated from the Second National Health and Nutrition Survey. Over three quarters, 77.4 percent, of all women began menstruation by age 13, 96.4 percent of all women began menstruation by age 15. The mean age at first menstruation for all women was 12.6 years, 12.7 years for white women and 12.5 years for black women. The difference in age at first menstruation between black and white women is not statistically significant.

TABLE 1.2 Percent Never Married Women Living In Metropolitan Areas Ever Experiencing Sexual Intercourse, By Age 1971 - 1982 (percent who have had intercourse)

Race and Age	1982	1979	1976	1971	Percent Change 1971-82
All Races*					
15-19	42.2	46.0	39.2	27.6	52.9
15	17.8	22.5	18.6	14.4	23.6
16	28.1	37.8	28.9	20.9	34.4
17	41.0	48.5	42.9	26.1	57.0
18	52.7	56.9	51.4	39.7	32.7
19	61.7	69.0	59.5	46.4	33.0
White					
15-19	40.3	42.3	33.6	23.2	73.7
15	17.3	18.3	13.8	11.3	53.1
16	26.9	35.4	23.7	17.0	58.0
17	39.5	44.1	36.1	20.2	95.5
18	48.6	52.6	46.0	35.6	36.5
19	59.3	64.9	53.6	40.7	45.7
Black					
15-19	52.9	64.8	64.3	52.4	1.0
15	23.2	41.1	38.9	31.2	-25.6
16	36.3	50.4	55.1	44.4	-18.2
17	46.7	73.3	71.0	58.9	-20.7
18	75.7	76.3	76.2	60.2	25.7
19	78.0	88.5	83.9	78.3	- .4

*Includes races other than Black and White.

Sources: Melvin Zelnik & John F. Kantner, "Sexual Activity, Contraceptive Use amd Pregnancy Among Metropolitan-Area Teenagers: 1971-1979", Family Planning Perspectives, Vol. 12, No. 5, Sept/Oct 1980. William Pratt, NCHS, National Survey of Family Growth, 1982, Cycle III, unpublished tabulations, 1984.

TABLE 1.2

Table 1.2 shows the percent of never married women aged 15 to 19 living in metropolitan areas who had ever experienced sexual intercourse by 1971, 1976, 1979 and 1982. For all 15- to 19-year-old metropolitan women, there was a 53 percent increase in the percent of sexually experienced females between 1971 and 1982 due primarily to increases among whites. Overall, the percent increase in the proportion sexually experienced was the largest among 17-year olds. There was also a substantial increase in the proportion of females aged 15 and 16 who were sexually experienced.

Although the proportion sexually active increased during the 1970s, between 1979 and 1982, there was a slight decrease in the percent of metropolitan teenage females experiencing intercourse. Of women aged 15 to 19 in 1982, about 42 percent had had intercourse compared to 46 percent of women aged 15 to 19 in 1979. The decline in the proportion sexually active occurred for 15-, 16-, 17-, 18- and 19-year-old female teenagers regardless of race. The decline for white teenagers was slight, from 42.3 to 40.3 percent for 15- to 19-year-olds and is not statistically significant. The decline for black teenagers was much larger, from 64.8 to 52.9 percent for 15- to 19-year-olds. From a statistical perspective this trend is only marginally certain, and will have to be monitored to determine its significance.

It is important to note that, while more than 50 percent of females aged 18 to 19 in 1982 had experienced intercourse, fewer than 30 percent of females aged 15 and 16 in 1982 had done so.

TABLE 1.3 All Women And Never-Married Women Who Have Ever Had Sexual Intercourse, By Age And Race, 1982, National Survey Of Family Growth

	Number of Women (1000s)			% Who Had Intercourse		
Age*	Total**	White	Black	Total**	White	Black
All Women						
All Ages 15-44	54,099	45,367	6,985	86.3	86.0	89.7
15-19	9,521	7,815	1,416	46.9	44.9	58.9
15-17	5,122	4,119	821	32.2	30.1	44.1
15	1,474	1,191	209	19.2	17.9	28.0
16	1,601	1,302	260	30.4	28.8	41.6
17	2,046	1,626	352	43.0	40.1	55.4
18	2,327	1,967	302	58.1	54.8	77.0
19	2,072	1,728	293	70.7	69.0	82.0
20-24	10,629	8,855	1,472	85.4	84.5	93.2
25-44	33,949	28,697	4,097	97.6	97.7	99.0
Never-Married Women						
All Ages 15-44	19,164	14,948	3,545	61.3	57.6	79.6
15-19	8,839	7,193	1,377	42.8	40.2	57.8
15-17	4,968	3,971	818	30.1	27.5	43.8
15	1,460	1,177	209	18.4	16.9	28.0
16	1,559	1,263	257	28.5	26.7	40.8
17	1,949	1,531	352	40.1	36.4	55.4
18	2,107	1,768	289	53.8	49.7	76.1
19	1,764	1,454	270	65.6	63.2	80.5
20-24	5,811	4,502	1,084	73.3	69.5	90.8
25-44	4,514	3,252	1,084	82.0	79.7	96.3

*Single years of age refer to the mid-points in the age intervals, e.g., 15 means 15.5 years.

**Includes races other than White and Black.

Source: Pratt et al. "Understanding U.S. Fertility," Population Bulletin, Volume 39 No. 5, December 1984. Reprinted by permission.

TABLE 1.3

Table 1.3 shows data from the National Survey of Family Growth (NSFG) on the number and percent of all women and never married women who ever had sexual intercourse by age and race for 1982. Among all women aged 15 to 19, 47 percent had had sexual intercourse (44.9 percent of white teens and 58.9 percent of black teens), compared to more than 85 percent of all women older than age 20. The proportions of never-married women aged 15-19 ever having had sexual intercourse are only slightly lower than for all women aged 15 to 19 because most women under age 20 have never been married. Unmarried teens account for 32 percent of all unmarried women ever having had intercourse and 8 percent of all sexually active women.

It should be noted that the proportions presented in this table for never-married women differ slightly for those presented in Table 1.2 for 1982 because they are not limited to metropolitan areas.

TABLE 1.4 Cumulative Sexual Activity By Single Year Of Age, Sex, Race And Ethnicity[1], 1983, National Longitudinal Survey Of Youth

	Cumulative % Sexually Active	
Age*	Male	Female
Total		
15	16.6	5.4
16	28.7	12.6
17	47.9	27.1
18	64.0	44.0
19	77.6	62.9
20	83.0	73.6
N	(4657)	(4648)
White		
15	12.1	4.7
16	23.3	11.3
17	42.8	25.2
18	60.1	41.6
19	75.0	60.8
20	81.1	72.0
N	(2828)	(2788)
Black		
15	42.4	9.7
16	59.6	20.1
17	77.3	39.5
18	85.6	59.4
19	92.2	77.0
20	93.9	84.7
N	(1146)	(1157)
Hispanics		
15	19.3	4.3
16	32.0	11.2
17	49.7	23.7
18	67.1	40.2
19	78.5	58.6
20	84.2	69.5
N	(683)	(703)

Note: Sample is limited to respondents age 20 and over at 1983 survey date.

*Percentages reference birthday for specified ages, e.g., 15 means by 15th birthday or end of 14.

[1]Hispanic persons may be of any race.

Source: Special Tabulations from the 1983 National Longitudinal Survey of Youth Center for Human Resource Research, Ohio State University.

TABLE 1.4

Data on the cumulative percent of males and females in the National Longitudinal Survey of Youth (NLS) who reported having had sexual intercourse are presented in Table 1.4. by age and race.

In all, 4 out of every 5 males and 7 out of every 10 females were sexually active by age 20. Among males, blacks were more likely to be sexually experienced than both Hispanic and white males. Nearly 60 percent of the black males had had intercourse by age 16 and 94 percent had had intercourse by age 20. In comparison, by age 16 about 32 percent of the Hispanic males and less than a quarter of the white males were sexually experienced. By age 20, slightly more than 80 percent of white and Hispanic males had had intercourse.

This data base, like the National Survey of Family Growth (NSFG), indicates that black females were more likely to have had intercourse than whites or Hispanics. Approximately 2 out of 10 black females were sexually active by age 16 and more than 8 out of 10 were sexually active by age 20. In contrast, only 1 out of 10 white and Hispanic females were sexually active by age 16 and 7 out of 10 were sexually active by age 20.

In general, males were sexually active at younger ages than females, and blacks were sexually active at younger ages than whites or Hispanics.

TABLE 1.5 Cumulative Percentage Of Women And Men Under 20 Who Ever Had Intercourse, By Age, Race And Study, United States, 1938 to 1984

			Females		Males	
Study	Year	Age	White	Black	White	Black
Kinsey, Pomeroy & Martin, 1948	1938-50	13	1	--	14.8	--
		14	2	--	27.8	--
Kinsey, Pomeroy, Martin & Gebhard, 1953, U.S.		15	3	--	38.8	--
		16	7	--	51.6	--
		17	--	--	61.3	--
		18	--	--	68.2	--
		19	--	--	71.5	--
		20	20	--	73.1	--
Vener & Stewart, 1974; Michigan, School B Sample, Tables 4 & 5	1970	13	10	--	24	--
		14	10	--	21	--
		15	13	--	26	--
		16	23	--	31	--
		17+	27	--	38	--
		TOTAL	16	--	28	--
	1973	13	10	--	28	--
		14	17	--	32	--
		15	24	--	38	--
		16	31	--	38	--
		17+	35	--	34	--
		TOTAL	22	--	33	--
Miller & Simon 1974, Illinois Table 3	1971	14-15	5.3	--	7.8	--
		16-17	21.7	--	20.9	--
		TOTAL	13.0	--	14.0	--
Sorenson, 1973 Table 404, U.S.	1972	13-15	30		44	
		16-19	57		72	
		TOTAL	45		59	
Simon, Berger & Gaznon, 1972 Table III (College Youth, U.S.)	1967	1t 18	7	--	25	--
		18	19	--	36	--
		19	30	--	63	--
Jessor & Jessor 1975, Colorado Table 1	1972	Grade 10	26	--	21	--
		11	40	--	28	--
		12	55	--	33	--
Udry, 1980						
Raleigh, NC	1978	13	6.1	35.0	27.0	69.8
Tallahassee, FL	1980	14	11.0	39.3	28.8	75.9
Zabin el al, 1984 Inner city Baltimore,	1981-82	1t 16	34.8	54.0	65.9	83.3
		16+	59.9	80.3	76.8	93.1

Source: Refer to references at the end of text.

TABLE 1.5

Table 1.5 presents cumulative percentage distributions of women and men under age 20 who ever had intercourse by age, race and study for the United States from 1938 to 1964. This table shows both the trends over time in adolescent sexual activity and variations and consistencies in sample estimates.

TABLE 1.6 Percent of Sexually Experienced Never-Married Women Aged 15-19 Who Had Intercourse Only Once, by Age and Race, 1976

	Race				
		White		Black	
Age	All	%	N	%	N
15-19	14.8	14.3	379	12.7	410
15-17	19.9	18.4	206	18.4	217
18-19	8.6	9.3	173	6.2	193

Source: M. Zelnik and J.T. Kantner, "Sexual and Contraceptive Experience of Young Unmarried Women in the United States 1976 and 1971." Family Planning Perspectives 9, 1977. Reprinted by permission.

TABLE 1.6

Table 1.6 shows the percent of a sample of sexually experienced never-married women aged 15 to 19 in 1976 who had only had sexual intercourse once. Data are from the 1976 National Survey of Young Women (NSYW). Among sexually experienced never-married 15- to 19-year-old women, nearly 15 percent had sexual intercourse only once. About 20 percent of women aged 15 to 17 and fewer than 10 percent of women ages 18 to 19 reported having had intercourse only one time. There were no substantial differences by race.

TABLE 1.7 Frequency Of Sexual Intercourse Among Unmarried Females 15 To 24 Who Ever Had Intercourse By Race, 1982 National Survey Of Family Growth

Frequency of Intercourse	Age 15-17	18-19	15-19	20-24
All Races*				
Total ever having intercourse	100.0% (N=295)	100.0% (N=473)	100.0% (N=768)	100.0% (N=626)
No intercourse in last 3 months	18.3	17.9	18.1	24.3
Once a month	20.7	13.5	16.4	14.2
2-3 times a month	27.9	23.0	25.0	22.3
Once a week	21.4	20.6	20.9	18.5
More than twice per week	9.8	20.7	16.3	19.3
Daily	1.9	4.3	3.3	1.4
White				
Total ever having intercourse	100.0% (N=146)	100.0% (N=175)	100.0% (N=321)	100.0% (N=367)
No intercourse in last 3 months	21.0	20.5	20.7	27.8
Once a month	14.5	11.1	12.4	14.5
2-3 times a month	29.2	20.8	24.1	20.5
Once a week	23.2	20.7	21.6	17.0
More than twice per week	10.8	22.0	17.6	19.3
Daily	1.3	4.9	3.6	0.9
Black				
Total ever having intercourse	100.0% (N=146)	100.0% (N=291)	100.0% (N=437)	100.0% (N=250)
No intercourse in last 3 months	11.8	7.5	9.5	15.0
Once a month	39.5	23.0	30.8	12.6
2-3 times a month	24.9	29.4	27.2	29.8
Once a week	13.3	21.0	17.4	21.3
More than twice per week	7.2	16.9	12.3	18.8
Daily	3.3	2.2	2.7	2.5

*Includes Blacks, White and other. Other category too small to percentage.

Source: Special Tabulations from the 1982 National Survey of Family Growth, Cycle III, conducted by the National Center for Health Statistics, DHHS.

TABLE 1.7

Table 1.7 presents the percentage distributions of unmarried females aged 15 to 24 who ever had sexual intercourse by race according to frequency of intercourse. These data are from the 1982 National Survey of Family Growth. (NSFG)

Overall, 18.1 percent of sexually experienced female teenagers reported that they had not had intercourse in the three months prior to the interview, 20.7 percent of whites and 9.5 percent of blacks. The young teenagers, aged 15 to 17, were somewhat less likely to have had sexual intercourse twice per week or more frequently than older teenagers.

TABLE 1.8 Distribution (in percentages) Of Total Number Of Premarital Sexual Partners, By Race: 1971, 1976 And 1979 - Sexually Experienced Females Aged 15 to 19, Metropolitan U.S.

	Sexually Experienced Females Aged 15-19								
	1971			1976			1979		
No. Of Partners*	Total (n=919)	White (n=431)	Black (n=488)	Total (n=714)	White (n=344)	Black (n=370)	Total (n=933)	White (n=476)	Black (n=457)
1	61.7	61.8	61.4	52.5	56.2	42.8	48.9	51.1	40.9
2-3	24.6	23.0	29.5	27.7	23.0	40.0	35.1	33.0	42.7
4-5	6.8	7.4	5.1	9.1	8.2	11.6	7.9	7.0	11.4
6 or more	6.9	7.8	4.0	10.7	12.6	5.6	8.1	8.9	5.0
Mean	n/a	n/a	n/a	2.9	3.0	2.4	2.6	2.7	2.5

*In the 1971 survey these precoded categories were used; in the 1976 and 1979 surveys individual responses were recoded.

n/a: Not available.

Source: M. Zelnik, "Sexual Activity Among Adolescents: Perspective of a Decade," In E.R. McAnarey (Ed.), Premature Adolescent Pregnancy and Parenthood. New York: Grune and Stratton, 1983. Reprinted by permission.

TABLE 1.8

The percentage distribution of a sample of women by race and by total number of premarital sexual partners as of the survey date is shown for 1971, 1976 and 1979 in Table 1.8. The percent of women who had had only one premarital sexual partner was lower in 1979 than in 1976 or 1971, 49 compared to 53 and 62 percent respectively. The largest difference was for black women. In 1971, 60 percent of the black women had had only one premarital sexual partner, while in 1979 about 40 percent of the black women had had only one premarital sexual partner. There was about an 11 percent age point decline in the number of white women who had had one partner in 1971 compared to 1979, 62 versus 51 percent. Although in all years white teenagers were more likely than black teenagers to have had only one nonmarital sexual partner, they were slightly more likely than blacks to have had 6 or more such partners.

TABLE 1.9 Percentage Distribution Of Women Aged 15-19 And Of Men Aged 17-21, By Relationship With Their First Sexual Partner, According To Race, 1979, Metropolitan U.S.

	Women			Men		
Relationship With First Partner	Total (N=936)	White (N=478)	Black (N=458)	Total (N=670)	White (N=396)	Black (N=274)
Engaged	9.3	9.6	8.2	0.6	0.5	1.0
Going steady	55.2	57.6	46.5	36.5	39.2	21.9
Dating	24.4	22.2	32.6	20.0	20.2	19.0
Friends	6.7	6.0	9.4	33.7	30.2	52.4
Recently met	4.4	4.6	3.3	9.3	9.9	5.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: M. Zelnik and F.K. Shah, "First Intercourse Among Young Americans," Family Planning Perspectives, 15 (2) (March/April), 1983. Reprinted by permission.

TABLE 1.9

Table 1.9 shows the percentage distribution of women aged 15 to 19 and of men aged 17 to 21 by their relationship with their first sexual partner by race. Data are from the National Survey of Young Women (NSYW) for metropolitan areas only in 1979.

Among the women, over 85 percent of the white and black women were engaged, going steady, or dating their first sexual partners. Only 4.6 percent of the white women and 3.3 percent of the black women had recently met their first sexual partners. Among males, however, 40 percent of the white men and 58 percent of the black men said that their first sexual partners were friends or someone they had just recently met.

TABLE 1.10 Percentage Distribution Of Women Aged 15-19 And Of Men Aged 17-21, By Relationship With Their First Sexual Partner, According To Age At First Intercourse, 1979, Metropolitan U.S.

	Women			Men		
Relationship With First Partner	<15 (N=273)	15-17 (N=555)	18+ (N=103)	<15 (N=305)	15-17 (N=294)	18+ (N=64)
Engaged	3.9	6.8	18.7	0.4	0.8	0.0
Going steady	44.4	61.9	46.1	20.0	46.2	47.9
Dating	28.9	21.6	29.0	18.6	22.4	12.6
Friends	13.2	4.3	5.4	54.4	20.0	26.7
Recently met	9.6	3.4	0.8	6.6	10.6	12.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: M. Zelnik and F.K. Shah, "First Intercourse Among Young Americans," Family Planning Perspectives, 15 (2) (March/April), 1983. Reprinted by permission.

TABLE 1.10

Table 1.10 shows the percentage distribution of women aged 15 to 19 and of men aged 17 to 21 by relationship with their first sexual partner according to age at first intercourse. Data are from the National Survey of Young Women (NSYW) for metropolitan areas only in 1979.

Among women, teenagers who were younger at first intercourse (less than 17 years) were more likely to have recently met and less likely to be engaged to their first partner than teenage women who had first intercourse at age 18 or 19. Among males, however, those who first had sexual intercourse at age 18 to 21 were more likely to have recently met their first partner than males who first had intercourse under age 18.

TABLE 1.11 Percentage Distribution Of Locale Of First Premarital Intercourse, Women Aged 15-19, By Race, 1976 And 1979, Metropolitan U.S.

	1976			1979		
Locale	Total (N=713)	White (N=345)	Black (N=368)	Total (N=923)	White (N=469)	Black (N=454)
Respondent's home	17.6	16.2	21.2	18.5	17.9	20.7
Partner's home	43.5	43.8	43.1	49.2	48.4	51.7
Home of relative/ friend	21.1	21.5	20.2	12.3	12.6	11.5
Motel/hotel	5.5	3.3	11.5	4.2	2.2	11.7
Car	7.1	8.9	2.0	8.9	10.6	2.7
Elsewhere	5.2	6.3	2.0	6.9	8.3	1.7

Source: M. Zelnik, "Sexual Activity Among Adolescents: Perspective of a Decade," In E.R. McAnarey (Ed.), Premature Adolescent Pregnancy and Parenthood. New York: Grune and Stratton, 1983. Reprinted by permission.

TABLE 1.11

Table 1.11 shows the percentage distribution of the location of first nonmarital intercourse for women aged 15 to 19 by race. The data are from the National Survey of Young Women (NSYW) for 1976 and 1979, metropolitan areas only.

For the majority, over three-quarters, in both 1976 and 1979, of all the women aged 15-19 who had a first premarital intercourse, the location was the home of the respondent, the partner or a friend or relative. In both years, black women were more likely than white women to first have sexual intercourse in a motel/hotel. For white women the location of first premarital intercourse was more likely to be a car or elsewhere than for black women. The partner's home was twice as likely to be the location of first intercourse as the young women's home.

TABLE 1.12 Estimated Cumulative Percent Ever Experiencing Sexual Intercourse By Single Year of Age, Race, Ethnicity[1] And Mother's Education, 1983, National Longitudinal Survey of Youth

	Males			Females		
	Respondent's Mother's Education[2]					
Age*	< HS	= HS	> HS	< HS	= HS	> HS
Total Sample						
15	23.9	13.7	12.0	7.3	4.7	3.3
16	38.0	24.8	23.0	16.9	10.2	10.4
17	57.9	43.8	40.6	34.6	23.7	21.4
18	72.4	61.8	55.6	53.7	40.5	34.1
19	83.5	77.6	68.7	71.8	61.4	50.5
20	87.6	82.8	76.5	81.3	73.4	60.8
N	1808	1878	790	1975	1791	756
Whites						
15	18.5	9.9	9.7	6.3	4.5	3.2
16	31.2	20.4	20.6	15.9	9.2	10.5
17	52.8	40.0	37.2	33.6	22.6	20.2
18	68.6	58.8	52.9	53.5	39.1	31.9
19	81.3	75.8	66.4	72.4	59.9	48.5
20	85.7	91.5	74.9	82.0	72.4	59.0
N	814	1359	592	883	1288	577
	< HS		≥ HS	< HS		≥ HS
Blacks						
15	42.8		43.7	12.0		6.8
16	62.7		58.0	23.2		16.1
17	79.3		76.3	44.0		33.8
18	87.7		85.1	63.2		53.9
19	93.0		92.5	80.1		72.0
20	94.5		94.0	87.2		80.6
N	541		525	595		499
Hispanics						
15	20.8		16.1	4.8		2.9
16	32.2		29.0	12.2		8.7
17	49.6		46.7	24.3		19.4
18	66.9		65.5	39.0		38.9
19	79.3		76.5	55.8		62.0
20	86.0		79.9	68.0		70.8
N	453		192	496		183

Note: Sample is limited to respondents age 20 and over at 1983 survey date.

* Percentages refer to birthday for specified ages, e.g., 15 means by 15th birthday or end of age 14.

[1] Hispanic persons may be of any race.
[2] Education is defined as less than High School, completing High School or more than High School (not available for Blacks and Hispanics).

Source: Special Tabulations from the 1983 National Longitudinal Survey of Youth, Center for Human Resource Research, Ohio State University.

TABLE 1.12

Table 1.12 shows cumulative estimates of sexual activity by single year of age and mother's education in 1983 for a national sample of youths. Data are from the National Longitudinal Survey of Youth (NLS).

In general, the lower the mother's educational level, the lower the respondent's age at becoming sexually active. For the total sample, more than half (57.9 percent) of the males whose mothers had less than high school educations and about two fifths of the males whose mothers had a high school education or more than a high school education were sexually active by age 17 (43.8 and 40.6 percent).

Slightly over a third of the females whose mothers had less than high school educations (34.6 percent) and less than one quarter of the females whose mothers had a high school education or more (23.7 and 21.4 percent) were sexually active by age 17.

Black males were more likely to be sexually active by age 20 than whites and Hispanics and, Hispanic males were as likely to be as sexually active white males by age 20, regardless of mother's education. Black females were more likely to be sexually active by age 20 than whites and Hispanics regardless of mother's education.

TABLE 1.13 Cumulative Sexual Activity By Single Year Of Age And By Drop Out Rate Of Respondent's High School, 1979 From National Longitudinal Survey Of Youth

	Drop-Out Rate of Respondent's High School, 1979			
	Males		Females	
Age*	LO (<10%)	HI (10%+)	LO (<10%)	HI (10%+)
Total Sample				
15	10.7	18.8	3.4	5.1
16	21.5	31.5	9.2	12.8
17	40.7	50.4	20.6	28.4
18	59.1	65.8	36.5	45.1
19	73.4	79.4	56.5	64.6
20	81.0	82.8	68.3	75.4
N	1387	1454	1441	1523
Whites				
15	8.4	13.5	3.2	4.2
16	17.9	26.1	8.9	11.5
17	37.3	45.4	19.9	26.1
18	56.5	61.9	35.4	41.9
19	71.7	77.4	55.5	61.9
20	79.7	80.7	67.5	73.8
N	998	762	1053	806
Blacks				
15	35.6	45.2	6.4	8.6
16	58.3	59.3	13.6	18.5
17	73.9	77.0	28.1	40.6
18	83.9	86.1	48.8	62.3
19	91.4	92.1	68.1	80.0
20	92.8	94.4	78.5	86.3
N	268	411	268	447
Hispanics				
15	9.8	19.2	.4	5.9
16	26.6	29.6	5.5	12.6
17	47.5	46.8	17.9	23.1
18	64.7	63.4	34.3	36.4
19	76.1	74.4	52.3	55.4
20	84.2	80.3	63.5	66.3
N	121	281	120	270

Note: Sample is limited to respondents age 20 and over at 1983 survey date.

*Percentages refer to birthday for specified ages, e.g., 15 means by 15th birthday or end of age 14.

[1]Hispanic Persons may be of any race.

Source: Special Tabulations from the 1983 National Longitudinal Survey of Youth, Center for Human Resource Research, Ohio State University.

TABLE 1.13

Table 1.13 presents data from the National Longitudinal Survey of Youth on cumulative sexual activity by single year of age and the drop out rate in the respondent's high school.

In general, the percent sexually active by age 20 was higher among respondents who attended schools with high drop-out rates (greater than 10 percent) compared to respondents who attended schools with low drop-out rates (10 percent or lower). Again, the incidence of sexual activity was greater among black males and females regardless of the drop-out rate in the respondent's high school.

It should be noted that high school drop-out rates may be a consequence of levels of sexual activity as well as a measure of the community context.

II. CONTRACEPTIVE USE AMONG ADOLESCENTS

This section presents information on contraceptive use among U.S. adolescents. Most of the available data are on females, but data from the National Surveys of Young Women and Men (NSYW/M) on male contraceptive use are presented. Data from the 1982 NSFG are also presented in this section.

Among limitations of the data on contraceptive use are the lack of information on males, and the lack of standardization of contraceptive categories across surveys. In the tables that follow, data on contraceptive use are presented for sexually active men and women by marital status, timing of use (i.e., just intercourse, most recent intercourse, currently).

TABLE 2.1 Percentage Distribution Of Sexually Active Women Aged 15-19, By Contraceptive-Use Status, According To Race, 1976, 1979, 1982

Contraceptive-Use Status	1982[a]			1979[b,c]			1976[b,c]		
	Total* (N=945)	White (N=579)	Black (N=342)	Total (N=937)	White (N=478)	Black (N=459)	Total (N=724)	White (N=349)	Black (N=375)
Always used	48.2	52.1	36.0	34.2	35.0	31.2	28.7	28.9	28.0
Used at first intercourse but not always				14.7	16.1	9.7	9.5	10.1	8.1
Did not use at 1st intercourse but used at some time	37.2	34.9	43.7	24.5	24.9	23.3	26.3	28.6	20.2
Never used	14.6	13.0	20.3	26.6	24.0	35.9	35.5	32.4	43.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a]All women 15-19 sexually active, including married women.
[b]Premaritally sexually active women 15-19; contraceptive use refers to use prior to pregnancy, marriage or time of survey, whichever event was earlier.
[c]Metropolitan U.S. only.

*Includes races other than Black and White.

Source: Unpublished Tabulations from the 1982 National Survey of Family Growth. Zelnik and Kanter, "Sexual Activity, Contraceptive Use and Pregnancy Among Metropolitan-Area Teenagers", 1971-1976, "Family Planning Perspectives," Vol. 12, Sept. - Oct. 1980.

TABLE 2.1

Table 2.1 displays the percentage distribution of premaritally sexually active females aged 15 to 19 in 1976, 1979, and 1982 by contraceptive-use status according to race. Data are from the National Surveys of Young Women (NSYW) for 1976 and 1979 and from the National Survey of Family Growth (NSFG) for 1982. Overall, the proportion of premaritally sexually active females who always used a contraceptive and who used a contraceptive at some time was higher in 1979 than in 1976. In 1976, 29 percent of the sample reported that they always used a contraceptive and about 36 percent reported that they used a contraceptive at some time. In 1979, 34 percent of the premaritally sexually active females said they always used a contraceptive and about 40 said they used a contraceptive at least some of the time.

White premaritally sexual active teenage females were more likely to have used a contraceptive than blacks in both 1976 and 1979. The proportion of those never using a contraceptive was somewhat lower in 1979 than in 1976 for both races. Even in 1979, though, a quarter of the young women had never used a method of birth control, about 36 percent of the black females and nearly a quarter of the white females. In 1976, over 40 percent of the sexually active black female teenagers and about one-third of the whites had never used a contraceptive before marriage.

The 1982 data include only women aged 15 to 19 who did not always use contraception. Among these women, 48.2 percent used at first intercourse, 52.1 percent of the white women and 36.0 percent of the black women. A lower proportion of women had never used a contraceptive method in 1982 compared to 1976, regardless of race. Only 14.6 percent of all sexually active 15- to 19-year old women had never used any method in 1982, 12 percentage points lower than in 1979.

TABLE 2.2 Percent Of Women Aged 15-44 Who Used A Contraceptive Method At First Intercourse And Percent istribution Of Women Who Used A Method, By Type Of Method, 1982 National Survey Of Family Growth

Characteristics	Percent Who Used a Method At First Intercourse	Percent Distribution of Those Using Contraception, by Method						
		Pill	IUD	Diaphragm	Condom	Rhythm	Withdrawal	Other
Total, 15-44	44.5	28.2	0.5	1.9	38.5	5.3	19.1	6.5
15-19	48.2	17.3	0.1	0.2	46.6	4.3	27.2	4.5
15-17	40.2	14.6	0.2	--	51.4	7.6	24.7	1.5
20-44	44.1	29.4	0.6	2.1	37.6	5.4	18.1	6.7

Source: Pratt et al. "Understanding U.S. Fertility," Population Bulletin, Volume 39 No. 5, December 1984. Reprinted by permission.

TABLE 2.2

The percent of women of all ages who used a contraceptive at first intercourse by age and method is shown in Table 2.2. Data are from the 1982 National Survey of Family Growth. (NSFG)

Among all women aged 15 to 44 in 1982, slightly less than one-half used a contraceptive method at first intercourse. For the older women in the sample who used a method, the most commonly used methods at first intercourse were the condom (37.6 percent), the pill (29.4 percent) and withdrawal (18.1 percent). Women currently aged 15 to 17 were the least likely to have used a method at first intercourse, all of them having been under 18 when they initiated coitus. Those women aged 15-19 in 1982 who used any method were most likely to have used the condom (46.6 percent), withdrawal (24.7 percent) and the pill (17.3 percent). The table show that less than half of all women used contraceptives at first intercourse, regardless of current age. The largest difference was between those who had first intercourse before age 18 or at age 18 or older.

TABLE 2.3 Percentage Distribution Of Sexually Experienced Women Aged 15-19 And Men Aged 17-21, By Type Of Contraceptive Method Used At First Intercourse; Percentage Distribution Of Those Using A Method, By Type Of Method; According To Race And Planning Status Of First Intercourse, 1979, Metropolitan U.S.

Type of Method Used at First Intercourse	Women						Men					
	Total		White		Black		Total		White		Black	
	Planned	Unplanned	Planned	Unplanned	Planned	Unplanned	Planned	Unplanned	Planned	Unplanned	Planned	Unplanned
All respondents	(N=166)	(N=767)	(N=78)	(N=399)	(N=88)	(N=368)	(N=162)	(N=495)	(N=98)	(N=292)	(N=64)	(N=203)
Female prescription	16.7	8.3	14.3	6.5	24.7	14.9	10.1	9.6	10.1	9.9	10.1	8.1
Female non-prescription	4.9	2.9	3.8	2.7	8.3	3.6	4.5	4.5	4.7	4.6	3.2	3.4
Male	50.0	33.1	58.6	36.8	21.3	19.4	36.3	27.8	37.0	29.6	32.8	18.0
Condom	(32.1)	(14.8)	(35.6)	(14.7)	(20.5)	(15.2)	(24.4)	(15.5)	(25.2)	(16.4)	(20.7)	(10.4)
Withdrawal	(17.9)	(18.3)	(23.0)	(22.1)	(0.8)	(4.2)	(11.9)	(12.3)	(11.8)	(13.2)	(12.1)	(7.6)
None	28.4	55.7	23.3	54.0	45.7	62.1	49.1	58.1	48.2	55.9	53.9	70.5
All users	(N=106)	(N=319)	(N=59)	(N=179)	(N=47)	(N=140)	(N=78)	(N=200)	(N=52)	(N=135)	(N=26)	(N=65)
Female prescription	23.4	18.7	18.7	14.1	45.5	39.4	19.8	23.0	19.5	22.4	21.9	27.4
Female non-prescription	6.7	6.6	5.0	5.9	15.2	9.4	8.8	10.6	9.0	10.6	7.0	11.6
Male	69.9	74.7	76.3	80.0	39.3	51.2	71.4	66.4	71.5	67.0	71.1	61.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Special tabulations from the 1982 National Survey of Family Growth, Cycle III, conducted by the National Center for Health Statistics, DHHS; M. Zelnik and F.K. Shah, "First Intercourse Among Young Americans," Family Planning Perspectives, 15 (a) March/April, 1983.

TABLE 2.3

Table 2.3 shows the percentage distribution of sexually experienced women aged 15 to 19 and men aged 17 to 21 by the type of contraceptive method used at first intercourse and the percentage distribution for those using a method by type of method according to race and planning status of first intercourse for 1979. Data are from the National Survey of Young Women (NSYW).

Among women and men, those who planned first intercourse were more likely to have used contraception than those who did not plan first intercourse. Of the women who used a method at first intercourse, the planners were more likely than those who did not plan to use a female prescription method while male planners were more likely than those who did not plan to use a male contraceptive method. Black women were more likely than other young men and women to rely on a female prescription method.

TABLE 2.4 Percentage Distribution Of Sexually Experienced Women Aged 15-19 By Type of Contraceptive Method Used At First Intercourse; Percentage Distribution Of Those Using A Method, By Type Of Method; According To Race, 1982 National Survey Of Family Growth

Type of Method Used at First Intercourse	Percent Using		
	Total*	White	Black
All Respondents:	(N=945)	(N=579)	(N=342)
Female prescription	8.4	8.0	10.6
Female nonprescription	4.3	4.9	1.9
Male	35.6	39.1	23.4
Condom	22.5	23.6	18.8
Withdrawal	13.1	15.5	4.6
None	51.8	47.9	64.0
Users only:			
Female prescription	17.4	15.4	29.6
Female nonprescription	8.9	9.4	5.4
Male	73.8	75.1	65.0
Condom	46.6	45.3	52.1
Withdrawal	27.2	29.8	12.9

*Includes races other than white and black.

Source: See Table 2.3

TABLE 2.4

Table 2.4 shows the percentage distribution of sexually experienced women aged 15 to 19 by type of contraceptive method used at first intercourse and the percentage of those using a method, by type of method, according to race. Data are from the National Survey of Family Growth (NSFG).

Black women aged 15 to 19 were more likely than white women to have used no method at first intercourse. Among the users, black females were more likely to have used a female prescription method and less likely to have used withdrawal than white women.

TABLE 2.5 Percentage Distribution Of Sexually Experienced Women Aged 15-19 And Men Aged 17-21 Who Did Not Use A Contraceptive Method At First Intercourse, By Reason Reported For Not Having Used A Method, According To Planning Status Of First Intercourse And Race, 1979, Metropolitan U.S.

	Women				Men			
	Planned	Unplanned			Planned	Unplanned		
Reason for Non-use	Total (N=56)	Total (N=424)	White (N=211)	Black (N=213)	Total (N=71)	Total (N=263)	White (N=40)	Black (N=123)
Wanted pregnancy or didn't care	3.5	4.6	4.7	4.5	4.9	1.8	1.8	1.4
Didn't want to use contraceptives[a]	31.2	8.0	5.3	17.0	25.6	15.3	13.4	24.1
Didn't know about contraception	19.8	12.4	9.2	22.8	19.3	19.9	16.1	36.6
Didn't think about using contraceptives	13.5	24.3	26.8	16.3	15.7	15.4	17.5	5.8
Intercourse was not planned	0.0	31.8	34.1	24.1	0.0	23.6	26.5	10.5
Contraception was not available	14.4	12.9	14.4	7.8	25.7	20.2	22.0	12.5
Thought pregnancy was impossible	16.2	5.0	4.7	5.6	8.5	3.2	2.7	5.7
Other	1.4	1.0	0.8	1.9	0.3	0.6	0.0	3.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Too few teenagers planned their first intercourse to allow for separate analysis by race.

[a]Category includes partner's objection to the use of contraceptives.

Source: See Table 2.3

TABLE 2.5

Table 2.5 shows the percentage distribution of sexually experienced women aged 15 to 19 and men aged 17 to 21 who did not use a contraceptive method at first intercourse by reason reported for not having used a contraceptive method, according to planning status of first intercourse and race. The data are from the 1979 National Survey of Young Women (NSYW) for metropolitan areas only.

For both males and females regardless of whether they planned first intercourse, less than 5 percent of those not using contraception at first intercourse reported that they wanted to become pregnant or did not care if a pregnancy occurred. Among those who planned first intercourse and did not use contraception, 16.2 percent of the women and 8.5 percent of the men, thought pregnancy was impossible, and 31.2 percent of the women and 25.6 percent of the men said they did not want to use contraception. Among those who did not plan first intercourse, white men and women were more likely than blacks to indicate that contraception was not available and more black men and women indicated that they did not know about contraception than white men and women.

TABLE 2.6 Percent Of Sexually Active Unmarried Women Under Age 20 By Timing Of First Contraception And Age At First Intercourse, According To Race, 1982, National Survey Of Family Growth*

Months Since First Intercourse	All Races**			White			Black		
	< 15	15-17	18-19	< 15	15-17	18-19	< 15	15-17	18-19
	(N=167)	(N=293)	(N=73)	(N=38)	(N=111)	(N=42)	(N=127)	(N=179)	(N=30)
0-1	22.6	36.9	53.3	24.4	41.8	55.6	22.9	28.3	43.6
1-3	14.8	13.5	20.1	20.2	14.2	21.9	10.4	11.7	12.4
4-6	12.5	5.0	8.6	12.1	6.2	8.6	14.3	2.9	8.6
7-12	8.0	10.0	2.7	7.6	9.5	1.4	9.2	10.7	8.5
More than 12	42.2	34.6	15.3	35.8	28.2	12.4	43.2	46.4	26.9

*Includes only women who did not use a method at first intercourse but have ever used a method.

**Includes races other than black and white.

Source: Special tabulations from the 1982 National Survey of Family Growth, Cycle III, conducted by the National Center for Health Statistics.

TABLE 2.6

The percentage distribution of sexually active unmarried women under age 20 by the timing of first contraception and age at first intercourse according to race is shown in Table 2.6. The data are from the 1982 National Survey of Family Growth (NSFG), and include only women who did not use contraceptives at first intercourse but used it at sometime after first intercourse.

The data indicate that younger teenage women (under age 15 and aged 15 to 17) were more likely than older teenagers to delay more than 12 months after first intercourse to begin using contraceptives. This was true regardless of race, but black teenagers were especially likely to delay using contraception. Only among whites aged 18 and 19 does a majority initiate contraceptive use within the first or second month after initiating sexual activity.

TABLE 2.7 Number of Women Aged 15-44 Exposed To The Risk Of Unintended Pregnancy,[a] And Percentage Currently Practicing Contraception, By Marital Status, by Age, 1982 National Survey Of Family Growth

	Number (in 1,000s)				Percentage Using Contraception			
Age	Total	Never Married	Currently Married	Widowed, Divorced or Separated	Total	Never Married	Currently Married	Widowed, Divorced or Separated
All women	33,481	8,664	20,534	4,284	88.1	77.6	93.4	82.7
15-24	10,045	6,145	3,318	583	81.6	75.3	92.8	84.3
15-19	3,244	2,853	361	b	71.0	68.6	90.0	b
20-24	6,801	3,291	2,957	553	86.6	81.0	93.1	85.2
25-34	14,004		9,549	2,191	90.9		94.2	83.9
35-44	9,432	9,432	7,667	1,509	90.9	83.5	92.8	83.1

[a]Includes women practicing contraception and those not practicing contraception who had sexual intercourse in the last three months and were not pregnant, postpartum, seeking pregnancy, or noncontraceptively sterile.
[b]Number or percentage based on less than 20 cases.

Source: C.A. Bachrach, "Contraceptive Practice Among American Women, 1973-1982", Family Planning Perspectives, (16) 6 (Nov./Dec.) 1984. Reprinted by permission.

TABLE 2.7

Table 2.7 shows the estimated number of women aged 15 to 44 exposed to the risk of unintended pregnancy and the percentage currently practicing contraception, by marital status and age. Data are from the 1982 National Survey of Family Growth (NSFG). Women exposed to the risk of an unintended pregnancy includes women practicing contraception and those not practicing contraception who had sexual intercourse in the last three months and were not pregnant, post partum, seeking pregnancy or non-contraceptively sterile.

These data indicate that among women aged 15 to 44 exposed to the risk of an unintended pregnancy, never-married women aged 15 to 19 were the least likely to be currently using contraception, whereas there were no differences among married women.

TABLE 2.8 Number Of Never Married Women 15-44 Years Of Age Who Were Exposed To The Risk Of An Unintended Pregnancy, And Percent Using A Method Of Contraception, By Race And Age, And Percent Distribution Of Contraceptors By Method Of Contraception, According To Race And Age: United States, 1982 (preliminary data based on a sample of the household population of the coterminous United States)

	All Races[3]					White					Black				
	15-44	15-19	15-17	18-19	20-24	20-44	15-44	15-19	15-17	18-19	20-44	15-44	15-19	15-17	18-19	20-24
No. Exposed[1]	8,727	2,872	1,081		3,291	5,885	6,372	2,188	803		4,184	2,098	618	253		1,480
Percent Using a Method	76.1	67.6	60.0		81.0	80.3	77.4	69.0	60.2		81.8	73.0	63.9	58.7		76.9
Method Chosen by Users:																
Pill	53.2	62.3	63.7		56.1	49.5	51.6	59.6	62.4		48.1	58.9	71.4	65.1		54.6
IUD	5.0	0.9*	1.3*		4.9*	6.7	3.7*	0.1*	0.3*		5.4*	8.0*	4.2*	4.5*		9.4
Diaphragm	13.7	6.4	3.6		13.8	16.6	17.1	7.8	4.4		21.2	2.6	2.0	1.5		2.9
Condom	11.8	22.2	25.0		8.3	7.5	13.0	24.7	28.6		7.9	7.9	13.0	14.5		6.1
Sterilization	5.1	0.4*	--		3.8*	7.0	3.1*	0.6*	--		4.2*	12.1	--	--		16.3
Other Methods[2]	11.2	7.8*	6.4*		13.0*	12.7*	11.4	7.3	4.2*		13.2*	10.4*	9.5*	14.3*		10.7
Total	100.0	100.0	100.0		100.0	100.0	100.0	100.0	100.0		100.0	100.0	100.0	100.0		100.7

[1]Includes women using contraception and those not using contraception who had sexual intercourse in the last 3 months and were not pregnant, post partum, seeking pregnancy, or noncontraceptively sterile.
[2]Includes foam, periodic abstinence, withdrawal, douche, suppositories, and other methods.
[3]Includes white, black, and other races.

*Figure does not meet standards of reliability or precision (30 percent or more relative standard error)

Source: C. A. Bachrach and W.D. Mosher: "Use of Contraception in the United States, 1982." National Center for Health Statistics, Advance Data from Vital and Health Statistics, No. 102, December 4, 1984; C.A. Bachrach, "Contraceptive Practice Among American Women, 1973-1982," Family Planning Perspectives (Nov./Dec.): 253-259, 1984.

TABLE 2.8

Table 2.8 shows the number of never-married women exposed to an unintended pregnancy and the percent who used any contraceptive method by age and race. For women using any method, the percentage distribution of type of contraceptive method is presented by age and race for 1982.

Among all never-married women aged 15 to 44 exposed to an unintended pregnancy, 3 out of every 4 were using a method of birth control--77 percent of the white women and 73 percent of the black women. The pill was the most commonly used method by all exposed women.

Among teenage women aged 15 to 19, 69 percent of the exposed white women and 64 percent of exposed black women used a method. Women aged 15 to 19 who were exposed to an unintended pregnancy and who were using contraception were more likely to use the pill then older women, 71 percent of black teens and 60 percent of white teens, compared to 55 and 48 percent of older women respectively.

TABLE 2.9 Number And Percentage Distribution Of Hispanic And Non-Hispanic Women Aged 15 To 19 (All Marital Statuses) Currently Exposed To The Risk Of Unintended Pregnancy By Current Contraceptive Status, 1982 National Survey of Family Growth.

			Non-Hispanic	
	Total	Hispanic	Black	White & Other
No. currently exposed (in 1,000s)	3244	290	630	2,324
Total	100	100	100	100
Using contraception	71	68	66	73
No contraception	29	32	35	27
Users Only				
No.	2302	197	413	1692
Total	100	100	100	100
Pill	64	63	70	63
IUD, sterilization	2	9	5	0
Condom	21	15	13	23
Diaphragm	6	5	2	7
Other	8	8	10	7

Source: A. Torres and S. Singh, Hispanic Adolescents and Contraception: An Analyses of Data from the 1982 National Survey of Family Growth Paper presented at the Annual Meeting of the APHA, 1985.

TABLE 2.9

Table 2.9 presents the estimated number and percentage distribution of Hispanic and non-Hispanic women aged 15 to 19 currently exposed to the risk of an unintended pregnancy by current contraceptive use status. These data are from the 1982 National Survey of Family Growth (NSFG), and they are categorized by ethnicity, not by race. Thus, persons of Hispanic origin may be black or white, but black, white and other persons cannot be of Hispanic origin. The definition of exposure to the risk of an unintended pregnancy is the same as that provided for Table 1.7.

Among Hispanic women aged 15 to 19 exposed to the risk of an unintended pregnancy, 68 percent were using some form of contraception. This proportion is slightly higher than for non-hispanic blacks and slightly lower than for non-Hispanic whites and others, but differences are very small.

Hispanic women aged 15 to 19 exposed to the risk of an unintended pregnancy and using contraception were as likely as non-Hispanic whites and others to use the pill and more likely than non-Hispanic blacks and non-Hispanic whites and others to use the IUD or sterilization.

TABLE 2.10 Percent Of Never-Married Women Aged 15-19 Who Correctly Perceived The Time Of Greatest Pregnancy Risk Within The Menstrual Cycle, By Age, Race And Sexual Experience, 1976 And 1971

	Race and Sexual Experience													
	All			White					Black					
				Total		Experienced		Not Experienced		Total		Experienced		Not Experienced	
Age	Total	Experienced	Not experienced	%	N	%	N	%	N	%	N	%	N	%	N
1976															
15-19	40.6	47.3	36.9	43.9	1,194	53.2	365	39.8	829	23.5	646	24.0	405	22.8	241
15	29.5	33.5	28.6	30.5	272	40.5	37	28.9	235	22.7	132	17.6	51	25.9	81
16	33.5	42.8	30.3	39.8	289	50.8	65	36.6	224	18.0	133	17.4	69	18.8	44
17	47.0	51.7	43.7	48.0	271	51.0	98	46.2	173	26.6	139	28.4	95	22.7	44
18	49.2	52.7	46.3	52.6	215	57.0	93	49.2	122	22.3	139	23.1	104	20.0	35
19	48.6	46.7	51.1	56.5	147	59.7	72	53.3	75	29.1	103	29.1	86	29.4	17
1971															
15-19	37.6	41.6	36.1	40.2	2,624	50.2	562	37.5	2,062	16.0	1,333	16.3	681	15.8	652
15	28.0	32.8	28.0	29.5	640	41.4	70	28.1	570	16.1	341	14.4	104	16.9	237
16	34.0	35.3	33.7	36.7	659	41.4	111	35.8	548	15.4	319	15.6	147	15.1	172
17	38.7	41.6	37.6	42.7	644	51.8	141	40.2	503	16.3	295	16.8	173	15.6	122
18	44.5	46.7	43.2	48.9	395	56.2	128	45.3	267	15.0	227	16.9	142	11.8	85
19	48.5	45.8	50.8	54.6	286	55.4	112	54.0	174	18.5	151	17.4	115	22.2	36

Source: M. Zelnik & J. F. Kantner, "Sexual and Contraceptive Experience of Young Unmarried Women in the United States, 1976 and 1971," Family Planning Perspectives, 9 (a) (March/April), 1977. Reprinted by permission.

TABLE 2.10

Table 2.10 presents the percent of never-married women aged 15 to 19 who correctly perceived the time of greatest risk of pregnancy within the menstrual cycle by age, race and sexual experience for 1971 and 1976. Data are from the National Survey of Young Women (NSYW).

Overall, a slightly higher proportion of never-married women aged 15 to 19 correctly perceived the time of greatest pregnancy risk within the menstrual cycle in 1976 compared to 1971, 40.6 compared to 37.6. In both years, sexually experienced young women were more likely than women not sexually experienced to perceive the time of greatest pregnancy risk within the menstrual cycle. Among whites, younger teenagers were less likely than older teenagers to be aware of the time of greatest risk. White women at all ages were more likely than black women to perceive the time of greatest pregnancy risk.

TABLE 2.11 Standardized Contraceptive-Use Failure Rates By User Characteristics And Method Type: Single Women, January 1, 1979 - July 1, 1982 (NSFG)

Characteristic	Method Type							
	Pill	IUD	Rhythm	Condom	Diaphragm	Spermacides	Other	No Method
Intent and Age[1]								
Delay								
Less than 18	4.5	4.4	15.9	7.8	14.2	15.5	9.1	33.5
18-19	3.1	4.9	17.5	8.7	15.7	17.1	10.1	36.5
20-24	4.5	4.3	15.7	7.7	14.0	15.2	9.0	33.0
25-29	3.4	3.2	12.0	5.8	10.7	11.7	6.8	26.0
30-44	3.9	3.8	13.9	6.8	12.4	13.5	7.9	29.8
Prevent								
Less than 18	11.0	10.5	33.9	18.4	31.6	34.0	21.1	62.9
18-19	9.6	9.3	30.6	16.3	28.3	30.5	18.7	58.2
20-24	7.2	6.9	23.9	12.3	21.7	23.5	14.2	47.6
25-29	5.0	4.8	17.4	8.6	15.6	17.0	10.0	36.3
30-44	1.9	1.8	7.0	3.3	6.2	6.8	3.9	15.7
Race[2]								
Black	4.5	4.3	2.3	7.7	13.9	15.1	8.9	32.5
Other Races	4.7	4.5	20.6	8.1	14.5	15.8	9.3	33.7
Parity[4]								
0 Live Births	3.9	3.8	14.1	6.8	12.3	13.4	7.9	29.5
1 + Live Births	6.6	6.3	22.4	11.2	20.0	21.6	13.0	44.3
Poverty Ratio Income[3]								
Less than 100%	5.4	5.2	18.6	9.3	16.7	18.2	10.8	38.2
100-299%	4.7	4.5	16.2	8.0	14.5	15.7	9.3	33.8
300% or more	3.9	3.7	13.7	6.7	12.2	13.2	7.8	29.0

[1]Standardized by race, parity, and poverty ratio income.
[2]Standardized by age, contraceptive intention, poverty ratio income and parity.
[3]Standardized by age, contraceptive intention, race and parity.
[4]Standardized by age, contraceptive intention, race and poverty ratio income.

Source: W.R. Grady, M.D. Hayward, J. Yagi, "Unintended Pregnancy in the United States: The Impact of Contraceptive Method and User Characteristics," Family Planning Perspectives (18) Sept./Oct.:200-209. Reprinted by permission.

TABLE 2.11

Table 2.11 presents standardized contraceptive-use failure rates by user characteristics and method type for characteristics and method type for single women. These data are for the period of January 1, 1979 to July 1, 1982 and are from the 1982 National Survey of Family Growth. Failure rates are the number of pregnancies occuring per 1,000 women using a given contraceptive method.

These data indicate substantial differences in contraceptive-use failure rates by user characteristics. Women under age 30 seeking to delay a pregnancy have lower use-failure rates than those seeking to prevent a pregnancy. Black women have higher use failure rates than women of other races. Women who had more than 3 live births had higher use failure rates than women who had fewer births. Women who had less than 100 percent of a poverty level income had higher contraceptive-use failure rates than women with higher income. Finally, women under age 18 seeking to prevent a pregnancy had the highest contraceptive-use failure rates regardless of other characteristics of the women.

III. PREGNANCY AMONG ADOLESCENTS

This section presents information on premarital and marital pregnancy, and pregnancy resolution among adolescents. The number of adolescent pregnancies is estimated by combining data on births available from the National Vital Statistics with data on abortions available from the Center for Disease Control and the Alan Guttmacher Institute and with an estimated proportion of miscarriages. These data are presented in Table 3.1.

Data on the number of pregnancies among sexually active women who do and do not use contraceptives by race, pregnancy intention, and other social characteristics are derived mainly from the National Longitudinal Survey of Youth (NLS), the National Surveys of Young Women and Men (NSYW/M), and the National Survey of Family Growth (NSFG). Because all three of these surveys are known to underestimate the proportion of adolescent women having abortions, they also underestimate the proportions of adolescent pregnancies.

TABLE 3.1 Reproductive Behavior: U.S. Women Aged 15-19, 1960-1984

	1970	1971	1972	1973	1974	1975	1976
Total Births	3,731,000	3,556,000	3,258,000	3,137,000	3,160,000	3,144,000	3,168,000
Births 15-19	644,708	627,942	616,280	604,096	595,449	582,238	558,744
Abortions	59,985*	150,598*	181,908*	232,440	279,790	326,780	362,680
Miscarriages	134,940	140,648	141,447	144,063	147,069	149,126	148,017
Pregnancies	839,633	919,188	939,635	980,599	1,022,308	1,058,144	1,069,441
Total Women 15-19	9,517,000	9,741,000	9,988,000	10,194,000	10,351,000	10,468,000	10,585,000
% Never Married	0.888	0.891	0.908	0.896	0.896	0.907	0.908
Total Never Married	8,451,096	8,679,231	9,069,104	9,133,824	9,274,496	9,494,476	9,611,180
% Single Sexually Experienced	0.250	0.270	0.280	0.300	0.320	0.340	0.350
Total Single Sexually Experienced	2,112,774	2,343,392	2,539,349	2,740,147	2,967,839	3,228,122	3,363,913
Total Ever Married	1,065,904	1,061,769	918,896	1,060,176	1,076,504	973,524	973,820
Total Sexually Experienced	3,178,678	3,405,161	3,458,245	3,800,323	4,044,343	4,201,646	4,337,733
Pregnancy Rate	0.088	0.094	0.094	0.096	0.099	0.101	0.101
Pregnancy Rate Sexually Experienced	0.264	0.270	0.272	0.258	0.253	0.252	0.247
Birth Rate	0.068	0.064	0.062	0.059	0.058	0.056	0.053
Birth Rate Sexually Experienced	0.203	0.184	0.178	0.159	0.147	0.139	0.129
Abortion Rate	0.006	0.015	0.018	0.023	0.027	0.031	0.034
Abortion Rate Sexually Experienced	0.019	0.044	0.053	0.061	0.069	0.078	0.084
Abortions/Pregnancies	0.071	0.164	0.194	0.237	0.274	0.309	0.339
Abortions/Abortions + Births	0.085	0.193	0.228	0.278	0.320	0.359	0.394
Abortions/Births	0.093	0.240	0.295	0.385	0.470	0.561	0.649

	1977	1978	1979	1980	1981	1982	1983	1984
Total Births	3,327,000	3,333,000	3,494,000	3,612,258	3,629,238	3,680,537	3,638,933	3,669,141
Births 15-19	559,154	543,407	549,472	552,161	527,392	513,758	489,286	469,682
Abortions	396,630	418,790	444,600	444,780	433,330	418,740	395,660	401,128**
Miscarriages	151,494	150,560	154,354	154,910	148,811	144,626	137,423	134,049
Pregnancies	1,107,278	1,112,757	1,148,426	1,151,851	1,109,533	1,077,124	1,022,369	1,004,859
Total Women 15-19	10,585,000	10,558,000	10,502,000	10,381,000	10,081,000	9,772,000	9,460,000	9,219,000
% Never Married	0.913	0.919	0.918	0.911	0.920	0.920	0.934	0.934
Total Never Married	9,664,105	9,702,802	9,640,836	9,457,091	9,274,520	8,990,240	8,835,640	8,610,546
% Single Sexually Experienced	0.360	0.380	0.390	0.400	0.420	0.430	0.430	0.430
Total Single Sexually Experienced	3,479,078	3,687,065	3,759,926	3,782,836	3,895,298	3,865,803	3,799,325	3,702,535
Total Ever Married	920,895	855,198	861,164	923,909	806,480	781,760	624,360	608,454
Total Sexually Experienced	4,399,973	4,542,263	4,621,090	4,706,745	4,701,778	4,647,563	4,423,685	4,310,989
Pregnancy Rate	0.105	0.105	0.109	0.111	0.110	0.110	0.108	0.109
Pregnancy Rate Sexually Experienced	0.252	0.245	0.249	0.245	0.236	0.232	0.231	0.233
Birth Rate	0.053	0.051	0.052	0.053	0.052	0.053	0.052	0.051
Birth Rate Sexually Experienced	0.127	0.120	0.119	0.117	0.112	0.111	0.111	0.109
Abortion Rate	0.037	0.040	0.042	0.043	0.043	0.043	0.042	0.044
Abortion Rate Sexually Experienced	0.090	0.092	0.096	0.094	0.092	0.090	0.089	0.093
Abortions/Pregnancies	0.358	0.376	0.387	0.386	0.391	0.389	0.387	0.399
Abortions/Abortions+Births	0.415	0.435	0.447	0.446	0.451	0.449	0.447	0.461
Abortions/Births	0.709	0.771	0.809	0.806	0.822	0.815	0.809	0.854

*Estimated number of legal abortions, which is recognized to underestimate the total number of abortions performed in that year.
**This estimate is based on the percentage of abortions to teenagers in 1982, which was 26.6 percent of all abortions.

TABLE 3.1 (continued)

Sources:

Births: 1960: U.S. Dept. HEW, NCHS, Vital Statistics of the United States, 1960, Vol I - Natility. USGPO:1962.
1965: U.S. Dept. HEW, NCHS, Vital Statistics of the United States, 1965, Vol I - Natility. USGPO:1967.
1970: U.S. Dept. HEW, NCHS, Vital Statistics of the United States, 1970, Vol I - Natility. USGPO:1965.
1971-1983: National Center of Health Statistics, Advance report of Final Natality Statistitics, 1971-1983.

Abortions: 1960-1973: C. Tietze, "Repeat Abortions - Why More?" Family Planning Perspectives 10(Sept/Oct):286-288, 1978.
Abortions to teens in 1960 and 1965 obtained by multiplying the estimated number of legal abortions to all women (from Tietze, 1978, above) by the estimated proportion obtained by teenagers (.33).
Abortions to teens in 1970-1972 obtained by multiplying the estimated number of legal abortions to all women (from Tietze, 1978, above) by the estimated proportion obtained by teenagers in 1973 (.312).

1973-1980: from S. Henshaw (Ed.), "Abortion Services in the U.S., Each State and Metropolitan Area, 1979-80." Detailed Tables - Table 1. N.Y.: Alan Guttmacher Institute, 1983.

1980-81: from S. Henshaw, N. Binkin, E. Blaine, and J. Smith, "A Portrait of American Women Who Obtain Abortions," Family Planning Perspectives 17(March/April):90-96, 1985.

1982-1984: from S. Henshaw, "Trends in Abortions, 1982-1984," Family Planning Perspectives 18(Jan/Feb):34, 1986.
Abortions for teens 15-19 in 1982-1984 obtained by multiplying the total number of legal abortions to women of all ages by the proportion of abortions to teens in 1981 (.275), the most recent year in which that distribution is available.

Number of teenagers and proportion single: See attached Table A

Proportion of teens sexually active: See Hofferth and Kohn, 1986.

Miscarriages: Miscarriages are calculated as 20% of births plus 10% of abortions, according to a model developed by C. Tietze and J. Bongaarts of the Population Council.

TABLE 3.1

Table 3.1 is a summary table of reproductive behavior of U.S. women aged 15 to 19 from 1960 to 1984. The sources of these data are outlined in detail at the end of the table. These are the most reliable national statistics available on pregnancies, births, abortions and miscarriages for adolescent women.

The pregnancy rate for women aged 15 to 19 declined between 1960 and 1965 but then rose steadily from 87 pregnancies per 1,000 women to 112 per 1,000 women in 1982. Recent data indicate a decline in the pregnancy rate to 109 per 1,000 women in 1984. The pregnancy rate calculated just for sexually experienced women, however, declined through the 1960s, 1970s and early 1980s from an estimated 458 pregnancies per 1,000 sexually active women to 233 pregnancies per 1,000 sexually active women. One result of this trend was a decrease in the number of births per 1,000 women aged 15 to 19 through the 1960s from 88 births per 1,000 women in 1960 to 51 births per 1,000 women in 1984. However, the decline in the birth rates for women aged 15 to 19 is also due to the increase in the abortion rate. The abortion rate for women aged 15 to 19 increased from an estimated 44 per 1,000 sexually active 15-to-19 year old women in 1960 to 93 per 1,000 sexually active women aged 15 to 19 in 1984.

TABLE 3.2 Pregnancies, Abortions, Miscarriages And Live Births By Marital Status To Women Aged 15 To 19, 1982

Category	Number	Percent
Total pregnancies to teens 15-19	1,077,124	100.0
Abortions	418,740	39.6
Miscarriages	144,626	13.4
Live births	513,758	47.0
Conceived post-maritally	145,907	13.4
Conceived premaritally, born post-maritally	118,678	10.9
Born premaritally	249,173	22.8

Source: See Table 4.1 for Source of Pregnancy, Abortion, Miscarriage and Live Birth Figures; O'Connell and Rogers 1984, derived from the 1982 Current Population Survey.

TABLE 3.2

Table 3.2 presents estimates of the total number of pregnancies, abortions, miscarriages, and live births by marital status to women aged 15 to 19 in 1982.

Of more than a million pregnancies to women aged 15 to 19 in 1982, less than half, 47 percent, are estimated to have resulted in live births; 39.6 percent ended in abortion; and about 13.4 percent were miscarriages. Thus, for every 10 adolescent pregnancies there were approximately 4 abortions, 1 miscarriage, and 5 births.

Of all pregnancies resulting in live births to women aged 15 to 19, 13.4 percent were conceived post-maritally, 10.9 percent were conceived premaritally and born post-maritally, and 22.8 percent were born premaritally.

TABLE 3.3 Proportion Of Women Ever-Pregnant Before Age 18 and Age 20, 1976 And 1981

Year and Race	Percentage Experiencing a First Pregnancy by Age	
	18	20
1976		
Total	23.7	41.1
1981		
Total	23.9	43.5
White	20.5	39.7
Black	40.7	63.1

Source: Calculated by Jacqueline Darroch Forrest, 1986; see Table 3.1 for source of data.

TABLE 3.3

Table 3.3 presents the proportion of all women ever experiencing a first pregnancy by age 18 and by age 20. In 1976, 23.7 percent of all women had a first pregnancy by age 18, 41.1 percent by age 20. In 1981, the proportions were slightly higher, 23.9 percent of the women experienced a first pregnancy by age 18, 43.5 percent by age 20. In 1981 a higher proportion of black women than white women had a first pregnancy by age 18, 40.7 compared to 20.5 percent and by age 20, 63.1 percent compared to 39.7 percent, respectively.

TABLE 3.4 Percentage of Premaritally Sexually Active Women Aged 15-19 Who Ever Experienced A Premarital First Pregnancy, By Contraceptive-Use Status* And Race, 1979 And 1976, Metropolitan U.S.

	1979			1976		
Contraceptive-Use Status	Total	White	Black	Total	White	Black
Always Used						
%	13.5	13.7	12.4	9.9	10.0	9.5
(N)	(307)	(165)	(142)	(203)	(98)	(105)
Used at 1st Intercourse, but not Always						
%	31.0	26.2	59.5	39.7	34.3	57.6
(N)	(119)	(73)	(46)	(66)	(36)	(30)
Did not use at 1st Intercourse, but at Some Time						
%	29.2	25.0	45.2	21.7	22.2	19.7
(N)	(241)	(137)	(104)	(171)	(95)	(76)
Never used						
%	62.2	58.8	70.3	49.5	41.5	65.2
(N)	(270)	(103)	(167)	(283)	(120)	(163)

*From first intercourse to first pregnancy or marriage, an interview.

Source: M. Zelnik and J. F. Kantner, 1980, "Sexual Activity, Contraceptive Use, and Pregnancy Among Metropolitan-Area Teenagers: 1971-1979," Family Planning Perspectives 12(5), (September/October), 1980. Reprinted by permission.

TABLE 3.4

Table 3.4 presents the percentage of premaritally sexually active women aged 15 to 19 who reported that they experienced a nonmarital first pregnancy, by contraceptive use status and race for 1979. The data are from the National Survey of Young Women (NSYW) for metropolitan areas only. As noted earlier, underreporting is a concern in surveys addressing sensitive topics such as nonmarital pregnancy.

Among sexually active women aged 15 to 19 who reported that they always used some form of contraception, 13.5 percent ever had a premarital pregnancy in 1979. Of women who said they used a contraceptive method at first intercourse but not consistently, 31 percent had a premarital pregnancy. Women who were premaritally sexually active and had never used contraception were the most likely to have ever experienced a premarital pregnancy, 62.2 percent in 1979.

White women aged 15 to 19 were less likely than black women to have ever experienced a premarital pregnancy, except among those who always used contraception, where whites were slightly more likely than blacks to have ever had a premarital pregnancy.

TABLE 3.5 Estimated Cumulative Percent Of Metropolitan-Area Females Aged 15-19 With Premarital First Pregnancy, By Duration Since First Intercourse, Race And Contraceptive Use Status, U.S., 1979

Months After First Intercourse	All Premaritally Sexually Experienced Females			Teens Who Never Used Contraceptive Methods			Teens Who Always Used Contraceptive Methods		
	Total	White	Black	Total	White	Black	Total	White	Black
3	13%	14%	14%	20%	21%	18%	4%	5%	2%
6	16	15	20	25	22	28	5	6	4
12	24	22	29	35	32	38	9	10	7
18	31	29	36	44	43	46	10	10	9
24	36	33	43	50	48	52	12	11	14

Source: M. Koenig and M. Zelnik, "The Risk of Premarital First Pregnancy Among Metropolitan-Area Teenagers: 1976 and 1979," Family Planning Perspectives 14(5):239-247, 1982.
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TABLE 3.5

The estimated cumulative percent of metropolitan-area females aged 15 to 19 with a premarital first pregnancy by duration since first intercourse, race and contraceptive use status in 1979 is presented in Table 3.5.

Within 24 months after first intercourse, 36 percent, or more than 1 out of every 3 premaritally sexually active teenagers, became pregnant. The difference between those who always used some method of contraception and those who had never used contraception was substantial. Within the first 3 months after intercourse, 20 percent of the teenagers who never used contraception became pregnant compared to only 4 percent of those who had always used contraception. By 24 months after first intercourse, half of the teenagers who had never used contraception had become pregnant while 12 percent of the teenagers who reported that they had always used a contraceptive method had become pregnant.

TABLE 3.6 Percentage Distributions Of Women Aged 15-19 Who Ever Experienced A Premarital First Pregnancy And Were Unmarried At The Time The Pregnancy Was Resolved, By Pregnancy Intention And, Among Those Who Did Not Want The Pregnancy, By Contraceptive Use, According To Race, 1979, 1976 And 1971* (Metropolitan-Area Teenagers)

Pregnancy Intention and Contraceptive Use	1979			1976			1971		
	Total	White	Black	Total	White	Black	Total	White	Black
Pregnancy Intention	(N=312)	(N=115)	(N=197)	(N=200)	(N=59)	(N=141)	(N=249)	(N=42)	(N=207)
Wanted	18.0	16.4	20.9	24.6	21.9	28.0	24.2	23.6	24.6
Not wanted	82.0	83.6	79.1	75.4	78.1	72.0	75.8	76.4	75.4
Did not want Pregnancy	(N=246)	(N=94)	(N=152)	(N=147)	(N=46)	(N=101)	(N=183)	(N=32)	(N=151)
Used Contraception	31.5	36.1	22.0	20.6	27.1	11.5	8.6	9.2	8.3
Did not use	68.5	63.9	78.0	79.4	72.9	88.5	91.4	90.6	91.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*Includes respondents pregnant at time of interview.

Source: M. Zelnik and J. F. Kantner. "Sexual Activity, Contraceptive Use and Pregnancy Among Metropolitan-Area Teenagers: 1971-1979." Family Planning Perspectives 12(5) (September/October), Table 6, 1980. Reprinted by permission.

TABLE 3.6

Table 3.6 shows the distribution of women aged 15 to 19 by race, in 1979, 1976, and 1971 who ever experienced a nonmarital pregnancy and were unmarried when the pregnancy was resolved, by pregnancy intention, and, among those who did not intend the pregnancy, by contraceptive use at the time of conception. Data are from the National Surveys of Young Women (NSYW) for metropolitan areas only. Again it is important to remember that under-reporting of pregnancies occurs in all surveys, and this could affect conclusions drawn from the data.

The data indicate that the percent of premarital pregnancies that were not intended in 1979 was slightly higher than in 1971--82 percent in 1979 compared to 76 percent in 1971. Black teenagers were slightly less likely than whites to describe their pregnancy as unwanted in 1971, 1976, and 1979.

Among teenagers who had an unintended premarital pregnancy the percent were using contraceptives were more than three times higher in 1979 than in 1971, 32 compared to 9 percent. Even so, black females who had an unintended premarital pregnancy were less likely to have used contraception than white females, especially in 1976 and 1979. Moreover, the great majority of unwanted premarital pregnancies in all years and in both race groups occurred to teens who were not using contraception.

IV. INDUCED ABORTION AMONG ADOLESCENTS

This section presents information on induced abortions among adolescent women in the United States. Data on abortions in the U.S. come from both federal and nonfederal sources. The Centers for Disease Control (CDC) carry out abortion surveillance which includes reports of abortions from most State health agencies, some hospitals, or from State participants in the Cooperative Health Statistics Registry of the National Center for Health Statistics (NCHS). Through this system, tabulations of abortions by characteristics are provided to CDC and released as an annual surveillance report. This report provides information on the distribution of abortions by age, race, parity and other characteristics.

The Alan Guttmacher Institute (AGI) contacts abortion service providers and thereby derives a more complete count of abortions, although no data are gathered regarding specific characteristics of the women. By combining information from both sources one can estimate the characteristics of women receiving abortions. For example, the CDC report of the percentage of abortions to teenagers can be applied to the total number of abortions reported through AGI. This is regularly done by AGI and CDC with some adjustments for differences in reporting systems, but it is not known how the characteristics of women differ in the two types of reporting.

NCHS obtains some individual level data through reports of induced abortions submitted to state vital registration offices. These data provide cross-classification of abortions by several characteristics, such as age, race and parity, but are obtained for a very limited number of states. For example, the report based on 1980 data covered only 295,932 abortions occurring in a twelve state area.

TABLE 4.1 Number And Percentage Distribution Of Legal Abortions, Abortion Rate Per 1,000 Women, And Percentage Of Pregnancies Terminated By Abortion, By Age Of Women, United States, Selected Years, 1974-1982

Measure	1973	1974	1977	1978	1979	1980	1981	1982
No. of Abortions	744,610	898,570	1,316,700	1,409,600	1,497,670	1,553,890	1,577,340	1,573,920
Less than 15	11,630	13,420	15,650	15,110	16,220	15,340	15,240	14,590
15-19	232,440	278,280	396,630	418,790	444,600	444,780	433,330	418,590
15-17	n.a.	u	(165,610)	(169,270)	(178,570)	(183,350)	(175,930)	(168,410)
18-19	n.a.	u	(231,020)	(249,520)	(266,030)	(261,430)	(257,400)	(250,330)
20-24	240,610	286,600	449,660	489,410	525,710	549,410	554,940	551,680
25-29	129,600	162,690	246,680	265,990	284,200	303,820	316,260	326,380
30-34	72,550	89,810	124,380	134,280	141,970	153,060	167,240	168,020
35-39	40,960	48,770	61,700	65,350	65,070	66,580	69,510	73,250
Greater than 40	16,820	19,000	22,000	20,670	19,900	20,900	20,820	21,260
% Distribution of Abortions								
Less than 15	1.6	1.5	1.2	1.1	1.1	1.0	1.0	0.9
15-19	31.2	31.0	30.1	29.7	29.7	28.6	27.5	26.6
15-17	n.a.	u	(12.6)	(12.0)	(11.9)	(11.8)	(11.2)	(10.7)
18-19	n.a.	u	(17.5)	(17.7)	(17.8)	(16.8)	(16.3)	(15.9)
20-24	32.3	31.9	34.2	34.7	35.1	35.4	35.2	35.0
25-29	17.4	18.1	18.7	18.9	19.0	19.6	20.0	20.7
30-34	9.7	10.0	9.4	9.5	9.5	9.8	10.6	10.7
35-39	5.5	5.4	4.7	4.6	4.3	4.3	4.4	4.7
Greater than 40	2.3	2.1	1.7	1.5	1.3	1.3	1.3	1.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Abortion Rate*	16.3	19.3	26.4	27.7	28.8	29.3	29.3	28.8
Less than 15+	5.6	6.4	7.6	7.5	8.3	8.4	8.6	8.3
15-19	22.8	26.9	37.5	39.7	42.4	42.9	43.3	42.9
15-17	n.a.	u	(26.2)	(26.9)	(28.8)	(30.2)	(30.1)	(30.1)
18-19	n.a.	u	(54.1)	(58.4)	(61.9)	(61.0)	(61.8)	(60.0)
20-24	26.2	30.4	44.3	47.2	49.9	51.4	51.1	51.2
25-29	16.4	19.6	26.9	28.4	29.6	30.8	31.4	31.5
30-34	10.9	13.0	15.7	16.4	16.5	17.1	17.7	17.7
35-39	7.1	8.4	9.8	9.8	9.4	9.3	9.5	9.3
Greater than 40***	2.9	3.3	3.9	3.6	3.4	3.5	3.4	3.3
% of Pregnancies Terminated by Abortions++	n.a.	22.0	28.6	29.2	29.6	30.0**	30.0	n.a.
Less than 15	n.a.		41.1	40.9	43.0	42.7	43.3	n.a.
15-19	n.a.	29.0	38.3	39.3	40.6	41.1	40.6	n.a.
15-17	n.a.	u	(38.7)	(39.7)	(41.3)	42.4	41.7	n.a.
18-19	n.a.	u	(37.9)	(39.3)	(40.1)	40.1	39.9	n.a.
20-24	n.a.	20.0	27.6	28.7	29.4	30.1	30.2	n.a.
25-29	n.a.	15.4	20.2	20.8	21.1	21.8	22.1	n.a.
30-34	n.a.	21.7	23.7	23.5	23.0	23.3	24.2	n.a.
35-39	n.a.	32.8	38.5	38.6	37.3	37.2	37.5	n.a.
Greater than 40	n.a.	44.4	52.5	51.6	50.4	51.7	51.1	n.a.

TABLE 4.1 (continued)

*Denominator for total abortion rate is women aged 15-44.
**Based on estimated age distribution of women giving birth in 1981.
***Numerator is abortions obtained by women 40 and over; denominator is women aged 40-44.

+Numerator is abortions obtained by girls younger than 15; denominator is number of 14-year-old females.
++Denominator is live births six months later (to match time of conception with abortions) and abortions. Pregnancies exclude miscarriages and stillbirths. Births and abortions are adjusted to age of woman at time of conception.

n.a. - not available.

Sources: S.K. Henshaw et al., Family Planning Perspectives Volume 15, No. 1, January/February 1983; S.K. Henshaw, et al, Family Planning Perspectives, Volume 17, No. 2, March/April 1985; Family Planning Perspectives, Volume 16, No. 3 May/June, 1984; Christopher Tietze and Stanley K. Henshaw, Induced Abortion: A World Review, 1986, New York, AGI, 1986; S.K. Henshaw "Trends in Abortions 1982-1984," Family Planning Perspectives, 18 (1) 1986.

TABLE 4.1

Table 4.1 presents the number and percentage distribution of legal abortions, the abortion rate and the percent of pregnancies terminated by abortion by the age of women. Data are tabulated by the Alan Guttmacher Institute (AGI) on the basis of its annual survey of clinics and other abortion providers combined with data on patient characteristics reported by most states to the Centers for Disease Control.

In 1982 there were 14,590 abortions to women under age 15, over 168,000 to women aged 15 to 17, and over 250,000 to women aged 18 to 19. Less than one percent of all abortions were obtained by women under age 15; 11 percent were to women aged 15 to 17; and 16 percent were to women aged 18 to 19. Nearly 30 percent of all abortions were to women less than 20 years of age.

The total abortion rate in 1982 was 28.8 abortions per 1,000 women aged 15 to 44. For young women less than 15 years of age the abortion rate was 8.6 per 1,000 women, only slightly higher than the 1974 rate. The abortion rate for women aged 15 to 19, however, increased from 27 to 43 per 1,000 women aged 15 to 19 between 1974 and 1982. The abortion rate (excluding miscarriages and stillbirths) for women aged 18 to 19 has consistently been about twice as high as the rate for women aged 15 to 17.

The proportion of pregnancies terminated by abortion for 15-to 19-year-old women increased by 40 percent from 1974 to 1981, from 29 to 40.6 percent. In 1981, 4 in 10 pregnancies among teens ended in induced abortion. The proportion of pregnancies to women younger than 20 terminated by abortion was higher than for any other age group with the exception of women over 40 years of age, (among whom 51 percent of pregnancies end in abortion).

The number of abortions, the rate, the ratio, and the percent of pregnancies ending in abortion rose rapidly between 1973 and 1979. In 1982, however, the abortion rate and ratio, and the number of abortions obtained by teenagers declined slightly.

TABLE 4.2 Percent Change In Abortion Rates And In The Number Of Pregnancies Terminated By Abortions By Age Group, 1974 To 1978, 1979 To 1981, 1981 To 1982

Age Group	% Change 1974-78		% Change 1979-81		% Change 1981-82	
	In Abortion Rate	In % Of Pregnancies Terminated By Abortions	In Abortion Rate	In % Of Pregnancies Terminated By Abortions	In Abortion Rate	In % Of Pregnancies Terminated By Abortions
Less than 15	+17	n.a.	+4	+0.7	-3	n.a.
15-19	+48	+36	+2	0	-1	n.a.
20-24	+55	+44	+2	+3	-0.2	n.a.
25-29	+45	+35	+6	+5	+0.3	n.a.
30-34	+26	+8	+7	+5	0	n.a.
35-39	+17	+18	+1	+0.5	-2	n.a.
Greater than 40	+9	+16	0	+1	-3	n.a.

n.a. - not available

Source: See Table 4.1

TABLE 4.2

The percent change in abortion rates and in the number of pregnancies terminated by abortion from 1974 to 1982 by age are shown in Table 4.2. As in Table 4.1, data are from the Alan Guttmacher Institute and the Centers for Disease Control (CDC).

The abortion rate increased between 1974 and 1978 by 17 percent among women younger than age 15, 48 percent among women aged 15 to 19 and 55 percent among women aged 20 to 24. The increase in the proportion of pregnancies terminated by abortion was 36 percent for women aged 15 to 19, and 44 percent for women aged 20 to 24.

The changes in the abortion rate and in the percent of pregnancies terminated by abortion were much lower between 1979 and 1981. The abortion rate increased by 4 percent for women under age 15 from 1979 to 1981, by 2 percent for women aged 15 to 19, and 2 percent for women aged 20 to 24. The proportion of pregnancies terminated by abortion rose less than one percent between 1979 and 1981 for young women under age 15, not at all for women aged 15 to 19, and 3 percent for women aged 20 to 24.

For all women under age 20, there were slight decreases in the abortion rates between 1981 and 1982. Data on the percent of pregnancies terminated by abortion for 1982 were not available.

TABLE 4.3 Abortion Rate* Per 1,000 Women, By Age-group And Race, According To Marital Status, 1979-81

Characteristics	Married	Unmarried
Age-Group and Race		
All Races**		
Less than 15***	--	8.4
15-19	17.7	31.3
15-17	15.4	21.7
18-19	18.4	47.0
20-24	14.1	50.3
25-29	9.4	41.6
30-34	6.0	25.7
35-39	2.7	9.0
White	6.5	33.3
Black	15.1	41.7

Note: Includes separated, divorced, widowed and never-married women

*Rates are three-year averages of induced terminations of pregnancy per 1,000 population of residence.
**Includes races other than Black and White.
***There is no accurate estimate of the number of married women under 15.

Sources: Abortions by aged-group and marital status--data on 11 states (Colorado, Kansas, Missouri, Montana, Oregon, Rhode Island, South Carolina, Tennessee, Utah, Vermont and Virginia). K. Prager, "Induced Terminations of Pregnancy: Reporting States, 1981" NCHS, Monthly Vital Statistics Report, Vol. 34, No. 4, July 1985.

TABLE 4.3

Table 4.3 shows the abortion rate per 1,000 women by age and marital status and by race and marital status for 1979-1981. Data are provided by 11 states to the National Center for Health Statistics (NCHS).

Abortion rates in general were higher among unmarried women than among married women. The highest abortion rates among unmarried women were between the ages of 18 and 29, while the highest abortion rates for married women were for those women under age 20.

Black women were considerably more likely to have an abortion than white women, particularly black married women. The abortion rates for black women for the 1979-1981 period were 15.1 per 1,000 married women and 41.7 per 1,000 unmarried women. For white women, the abortion rates were 6.5 per 1,000 married women and 33.3 per 1,000 unmarried women.

TABLE 4.4 Estimated Abortion Rate Per 1,000 Women Aged 12-19* By Race, United States, 1971-1978

	Abortion Rate		
Year	White	Black and Other**	Ratio of Black Rate to White Rate
1972	11.7	17.4	1.5
1973	14.1	25.4	1.8
1974	16.0	34.0	2.1
1975	18.0	42.0	2.3
1976	19.8	48.1	2.4
1977	22.2	50.7	2.3
1978	24.3	51.2	2.1

*Based on age at conception.
**Including teenagers of all other racial minorities.

Source: N.V. Ezzard, W. Cates, Jr., D.G. Kramer, and C. Tietze, "Race- Specific Patterns of Abortion Use by American Teenagers," American Journal of Public Health, 72: 809, 1982. Reprinted by permission.

TABLE 4.4

Table 4.4 shows the estimated abortion rate per 1,000 females aged 12 to 19 by race from 1972 to 1978. These data are from the Centers for Disease Control (CDC).

The rate of abortion per 1,000 women more than doubled between 1972 and 1978 for teenagers of both races. For every 1,000 white women there were 11 abortions in 1972 and 24 abortions in 1978. The abortion rate was 17 per one thousand black women in 1972 and 51 per 1,000 in 1978. By 1978 the abortion rate for black teenagers had increased to twice the rate for whites.

TABLE 4.5 Legal Abortions Per 1,000 Births (Abortion Ratio) By Age At Conception And By Race, United States, 1972-1978

	Age Less Than 15		Age 15-17		Age 18-19		Teenagers Age 12-19		
Year	White	Black & Other	White	Black & Other	White	Black & Other	White	Black & Other	Ratio of Black Ratio To White Ratio
1972	393	221	268	158	264	210	270	186	0.7
1973	419	301	332	245	339	322	338	283	0.8
1974	427	397	385	346	388	449	388	395	1.0
1975	489	505	456	457	441	551	449	503	1.1
1976	515	595	533	558	491	649	509	602	1.2
1977	568	612	603	597	526	660	558	627	1.1
1978	617	629	665	620	581	668	615	643	1.0

Source: See Table 4.4.

TABLE 4.5

Table 4.5 shows the number of legal abortions per 1,000 births (Abortion Ratio) by age at conception by race from 1972 to 1978. The data on abortions are from the Center for Disease Control (CDC) and the data on births are from National Center for Health Statistics (NCHS).

From 1972 to 1978, the ratio of abortions per 1,000 live births more than doubled for all women aged 12 to 19 at conception. There were 270 abortions for every 1,000 live births to white teenage women in 1972 and 615 per 1,000 in 1978. The ratio of abortions per 1,000 live births for nonwhite (black and other) teenage women was lower than for white in 1972. Between 1972 and 1978, the ratio rose more rapidly among nonwhite teenagers than among white teenagers, and in 1978 the nonwhite ratio exceeded the white ratio for teenagers under age 15 and ages 18 and 19.

TABLE 4.6 Ratios of Induced Terminations of Pregnancy By Race And Age Of Woman, 1980: 12-State Area (Ratios Per 1,000 Live Births. Induced Terminations of Pregnancy And Live Births Are Only Those Occurring In The Area Among Residents Of The Area)

	Ratio		
Age of Woman	All Races[a]	White	Black
All Ages	388.2	1,337.7	638.7
Under 14 years	1,868.1	2,085.2	1,749.6
14 years	1,380.6	1,632.0	1,200.2
15-19 years	738.7	786.3	644.5
15 years	975.4	1,177.1	774.9
16 years	894.0	1,042.8	673.4
17 years	765.4	841.8	621.2
18 years	794.1	847.5	669.0
19 years	603.1	613.0	591.5
20-24 years	411.6	362.2	638.6
25-29 years	247.7	197.1	580.1
30-34 years	254.2	201.7	598.3
35-39 years	443.2	371.0	836.5
40 years and over	837.8	784.5	1,120.3

Note: The 12-State area includes Colorado, Kansas, Missouri, Montana, New York, Oregon, Rhode Island, South Carolina, Tennessee, Utah, Vermont, and Virginia.

[a]Includes races other than white and black.

Source: Burnham, 1983: Table A; see references at end of this volume.

TABLE 4.6

Table 4.6 presents the number of induced terminations of pregnancy or abortions per 1,000 live births (abortion ratio) by race and age of women for the 12 state reporting area in 1980. The data, collected from 12 states, are provided by National Center for Health Statistics (NCHS).

For women of all ages and races, there were 388 abortions per 1,000 live births. The abortion ratio was highest among women under age 20. For women under age 14 there were 1,868 abortions per 1,000 live births, and for women aged 14 there were 1,380 abortions per 1,000 live births.

For all ages under age 20, the abortion ratio was higher for white women than for black women. Among women aged 20 and over, however, the number of abortions per 1,000 live births was higher for black women than for white women.

TABLE 4.7 Percent of Induced Terminations of Pregnancy To Women With No Previous Induced Termination, By Age And Race Of Women: 12-State Area, 1980 (Data Include Only Induced Terminations Of Pregnancy Occurring In The Reporting Area)

	Ratio		
Age of Woman	All[a] Races	White	Black
All Ages	65.7	68.9	57.8
Under 15 years	94.7	96.0	93.5
15-17 years	87.6	89.1	83.9
18-19 years	77.6	79.6	70.8
20-24 years	62.2	65.1	54.5
25-19 years	54.8	57.9	47.1
30-34 years	56.4	60.0	47.0
35-39 years	60.1	65.8	48.0
40 years and over	67.2	72.2	54.5

Note: The 12-State area includes Colorado, Kansas, Missouri, Montana, New York, Oregon, Rhode Island, South Carolina, Tennessee, Utah, Vermont, and Virginia.

[a]Includes races other than white and black.

Source: Burnham, 1983: Table E.; see references at the end of this volume.

TABLE 4.7

Table 4.7 shows the proportion of abortions obtained by women with no previous induced termination, by age and race of women for the 12 state reporting area in 1980. The data are from the National Center for Health Statistics (NCHS).

The large majority of women, regardless of race, under age 20 having an abortion in 1980 were having their first abortion. Among young women under age 15, 94.7 percent had not had a previous abortion--96.0 percent of white women and 93.5 percent of black women. Among women aged 15 to 17 having an abortion, 87.6 percent had not had previous abortion--89.1 percent of white women and 83.9 percent of black women. Finally, among women aged 18 to 19 having an abortion in 1980, 77.6 percent had not had a previous abortion--79.6 percent of white women and 70.8 percent of black women.

V. MARRIAGE AMONG PREGNANT ADOLESCENTS

This section presents information on marriage among pregnant adolescents and adolescents who have a first birth in the United States. The focus is on the marital status of the adolescent female at conception, at birth and after birth.

The data presented in the following tables are from the Current Population Surveys (CPS), the 1982 National Survey of Family Growth and the National Surveys of Young Women and Men (NSYW/M). They show that consistent with the decline in marriage among all teenagers, there has been an increase in the proportion of teenage women who remain unmarried after the birth of their child. These data permit comparisons by race but not by ethnic group.

TABLE 5.1 Percent Of Males And Females Aged 15 to 19 Never-Married, By Race And Ethnicity1, 1960-1985

		Males			Females		
Year	Category	15-17	18-19	15-19	15-17	18-19	15-19
1960	Total	99.1	91.1	96.3	93.2	67.8	83.9
	White	99.1	91.0	96.2	93.3	67.6	83.9
	Nonwhite	99.2	91.9	96.6	92.3	69.3	83.8
1970	Total	98.6	91.3	95.9	95.3	76.6	88.1
	White	98.7	91.3	95.9	95.4	76.4	88.0
	Black	98.0	91.0	95.5	95.0	77.7	88.6
	Hispanic	97.7	87.4	94.0	93.1	70.6	84.7
1973	Total	99.2*	90.4	96.5*	96.2	75.8	89.6*
	White	99.1*	89.5	96.2*	96.2	74.4	89.1*
	Non-white	99.5*	95.6	98.4*	96.1	83.9	92.2*
	Hispanic	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1976	Total	99.4*	91.9	97.0*	97.0*	78.3	90.8*
	White	99.3*	91.2	96.7*	96.8*	77.2	90.2*
	Black	99.6*	95.9	98.5*	98.1*	85.0	93.8*
	Hispanic	99.5*	92.7	97.7*	94.6*	74.9	87.1*
1980	Total	99.4	94.2	97.3	97.0	82.8	91.1
	White	99.4	93.6	97.0	96.7	81.5	90.4
	Black	99.4	97.7	98.8	98.3	90.9	95.4
	Hispanic	98.5	92.2	95.8	94.6	79.2	88.2
1981	Total	99.2	95.7	97.8	97.2	84.7	92.0
	White	99.2	95.4	97.7	96.9	83.4	91.3
	Black	99.6	97.0	98.6	98.8	92.7	96.4
	Hispanic	99.2	91.8	96.3	95.3	74.0	86.7
1984	Total	99.7	96.8	98.5	98.0	87.1	93.4
	White	99.6	96.5	98.3	97.7	85.2	92.4
	Black	100.0	98.2	99.3	99.3	97.2	98.4
	Hispanic	99.0	93.5	96.8	95.7	79.1	88.8
1985	Total	99.7	97.1	98.7	98.0	86.7	93.4

[1]Hispanic persons may be of any race and Black and White totals may include Hispanics.

n.a. = not available

*Includes males and females 14 years of age.

Source: U.S. Bureau of the Census, "Marital Status and Living Arrangements", CPR, Series P-20, 1960, 1970, 1973, 1975, 1976, 1981, 1984, 1985; Statistical Abstract of the U.S.: 1985, Washington, D.C., 1986.

TABLE 5.1

Table 5.1 presents the proportion of males and females never-married by race from 1960 to 1985 (breakdowns by race were not available for 1985). There was a gradual increase in the proportion of men who remained single until at least age 20 and a rather striking delay in marriage among young women. The percent of unmarried females aged 15 to 19 rose by about 11 percent and the percent of unmarried males aged 15 to 19 rose about 2 percent between 1960 and 1985. Most of this increase was for 18 and 19 year old women. The proportion of females who were single rose by 28 percent for 18 and 19 year old women.

The increasing tendency to remain single was more dramatic for black females aged 18 and 19 than for white and Hispanic females aged 18 and 19. While the proportions of black and white 18 to 19 year-old females who were unmarried were similar in 1970, by 1984 the proportion unmarried was 12 percentage points higher among blacks. The proportion of Hispanic females 18 to 19 years old who were unmarried was consistently lower than for either whites or blacks, even though 8.5 percentage points higher in 1984 than 1970. The percent increase in the proportion of black females aged 18 to 19 was 25 percent compared to 12 percent for both white and Hispanic females.

TABLE 5.2 Percentage Of First-Born Babies Born to Mothers Aged 15-19, Conceived Either Maritally or Extra-Maritally, By Race, Age, and Marital Status at First Birth According To Birth Cohort Of Baby (numbers, in 1,000s, shown in parentheses)

	Birth Cohort of Baby						
	1950-1954	1955-1959	1960-1964	1965-1969	1970-1974	1975-1979	1980-1981
All Women Aged 15-19	(1,388)	(1,739)	(1,957)	(2,112)	(2,435)	(2,061)	(622)*
Conceived/born in wedlock	69.9	60.6	54.0	45.6	33.6	32.5	28.4
Conceived/born out-of-wedlock	16.1	18.3	22.4	24.2	35.2	44.5	48.5
Conceived out-of wedlock/born in wedlock	14.0	21.0	23.6	30.4	31.2	23.0	23.1
White Women Aged 15-19	(1,120)	(1,400)	(1,574)	(1,633)	(1,746)	(1,469)	(500)*
Conceived/born in wedlock	77.4	68.6	61.7	52.3	42.7	41.9	35.6
Conceived/born out-of-wedlock	9.4	10.6	13.7	14.5	20.2	30.3	36.8
Conceived out-of wedlock/born in wedlock	13.2	20.8	24.7	33.3	37.1	27.8	27.6
Black Women Aged 15-19	(251)	(316)	(343)	(429)	(641)	(542)	(141)*
Conceived/born in wedlock	35.1	24.7	18.9	18.9	8.9	6.6	3.5
Conceived/born out-of-wedlock	46.6	52.8	62.1	61.3	75.7	83.2	87.9
Conceived out-of wedlock/born in wedlock	18.3	22.5	19.0	19.8	15.4	10.1	8.5

*Data are incomplete for this cohort and may underestimate out of wedlock births.

Source: M. O'Connell and C.C. Rogers, Family Planning Perspectives, Volume 16, No. 4, July/August 1984; Data are derived from June 1980 and June 1982 CPS.

TABLE 5.2

The percentage of first babies born to mothers aged 15 to 19, by race and marital status at conception, and at first birth by the birth cohort of the baby, is presented in Table 5.2. Data are from the Current Population Surveys (CPS).

Overall, the percent of first-born babies conceived out of wedlock from 1980 to 1981 was more than twice the percent conceived out of wedlock from 1950 to 1954 (72 and 30 percent respectively). Of the babies conceived out of wedlock from 1950 to 54, about one-half were born out of wedlock. In contrast, seven out of every ten babies conceived out of wedlock and born between 1980 and 1981, were born out-of-wedlock. This represents a tripling in the proportion of babies born to single teenagers (16 percent between 1950 and 1954 compared to 49 percent between 1980 and 1981).

Black teenagers were much more likely to both conceive and give birth out-of-wedlock than white teenagers. Almost two-thirds (65 percent) of all first births to black women aged 15 to 19 from 1950 to 1954 and over 96 percent from 1980 to 1982 were babies conceived out of wedlock. Out of those conceived out of wedlock, seven out of every ten babies born between 1950 and 1954 and nine out of every ten babies born between 1980 and 1981 were born to single mothers. The increase in the percent of all first born babies conceived and born out of wedlock to black women was almost 90 percent from 1950-54 to 1980-81 (47 and 88 percent respectively).

In comparison, less than 25 percent of all first births to white women, between 1950 to 1954, but about two-thirds born from 1980 to 1981 were conceived out-of-wedlock. From 1950 to 1954 approximately 1 out of every 5 babies conceived out-of-wedlock was born out-of-wedlock; from 1980 to 1981, 3 out of every five premaritally pregnant white teens were still single at the birth of their first child. The proportion of all first born babies conceived and born out-of-wedlock to white women nearly quadrupled from 9 percent between 1950 and 1954 to 37 percent between 1980 and 1981.

VI. BIRTHS TO ADOLESCENTS

This section presents information on the number of births to U.S. adolescents by the mother's age, race, ethnicity, and marital status, and by the father's age and race. Data on first births occurring to adolescent females as well as birth rates are presented. Also included are data on prenatal care among adolescent mothers and infant mortality rates for babies born to adolescent mothers.

In the following tables, the data on births to adolescents are from the National Vital Statistics and the 1980 National Natality Survey. The data on births by mother's age and race are considered to be very reliable. However, the data on birth to fathers are less reliable because there is a substantial under-reporting of the age of the father by adolescent females. Despite these limitations data are presented in order to provide a rough indication of the age of fathers of babies born to adolescent mothers. Data on births to adolescent males and females from the National Longitudinal Survey (NLS) are also presented and the same caution on under-reporting of fatherhood by males is relevant.

Data on births to adolescent mothers of Hispanic origin are presented separately to show variations among mothers of Hispanic origin and because comparable time series of data are not available for Hispanic origin mothers.

TABLE 6.1 Number Of Births In The United States To Women Under Age Twenty By Race, 1955-1984

	All Races			Whites			Non-Whites			Blacks*		
Year	Under 15	15-17	18-19	Under 15	15-17	18-19	Under 15	15-17	18-19	Under 15	15-17	18-19
1984	9,965	166,726	302,938	3,959	105,016	215,937	6,006	61,728	87,001	5,720	56,907	77,485
1983	9,752	172,673	316,613	4,031	109,641	228,511	5,721	63,032	88,102	5,439	58,160	78,506
1982	9,773	181,162	332,596	4,153	115,869	242,079	5,620	65,293	90,517	5,395	60,282	80,252
1981	9,632	187,397	339,995	3,970	120,913	249,100	5,662	66,484	90,895	5,425	61,850	81,428
1980	10,169	198,222	353,939	4,171	127,657	260,401	5,998	70,565	93,538	5,793	65,966	84,387
1979	10,699	200,137	349,335	4,402	127,970	255,837	6,297	72,167	93,498	6,139	67,728	85,077
1978	10,772	202,661	340,746	4,512	130,957	249,103	6,260	71,704	91,643	6,068	71,182	83,684
1977	11,455	213,788	345,366	4,671	138,223	253,960	6,784	75,565	91,406	6,582	71,182	84,008
1976	11,928	215,493	343,251	5,054	139,901	253,374	6,874	75,592	89,877	6,661	71,429	82,507
1975	12,642	227,270	354,968	5,073	148,344	261,785	7,569	78,926	93,183	7,315	74,946	86,098
1974	12,529	234,177	361,272	5,053	152,257	267,895	7,476	81,920	93,377	7,291	77,947	86,483
1973	12,861	238,403	365,693	4,907	153,416	271,417	7,954	84,987	94,276	7,778	81,158	87,615
1972	12,082	236,641	379,639	4,573	150,897	283,089	7,509	85,744	96,550	7,363	82,217	90,132
1971	11,578	226,298	401,644	4,130	143,806	302,920	7,448	82,492	98,724	7,264	79,238	92,446
1970	11,752	223,590	421,118	4,320	143,646	319,962	7,432	79,944	101,156	7,274	76,882	94,944
1969	10,468	201,770	402,884	3,684	128,156	306,118	6,784	73,614	96,766	6,650	71,020	90,918
1968	9,504	192,970	398,342	3,114	121,166	305,336	6,390	71,804	93,006	6,312	69,594	87,986
1967	8,593	188,234	408,211	2,761	118,035	317,204	5,832	70,199	91,007	5,742	68,133	86,410
1966	8,128	186,704	434,722	2,666	119,800	345,312	5,462	66,904	89,410	5,370	64,922	84,818
1965	7,768	188,604	402,290	2,444	124,294	319,460	5,324	64,310	82,830			
1964	7,816	196,220	389,490	2,676	134,596	309,762	5,140	61,624	79,728			
1963	7,594	180,564	405,890	2,584	112,096	321,212	4,814	54,848	75,662			
1962	7,340	172,836	427,462	2,690	117,660	342,172	4,520	51,818	75,970			
1961	7,462	177,894	423,826	2,808	125,194	346,512	4,654	52,700	77,314			
1960	6,780	182,408	404,558	2,524	129,544	328,586	4,256	52,864	75,972			
1959	6,776	177,786	393,262	2,572	125,822	319,548	4,204	51,964	73,714			
1958	6,648	171,786	382,418	2,648	121,704	310,992	4,000	50,062	71,426			
1957	6,960	170,716	379,496	2,648	120,040	308,934	4,312	50,676	70,562			
1956	6,356	160,580	359,842	2,348	112,184	290,638	4,008	48,396	69,204			
1955	5,883	149,722	334,375	2,136	103,503	269,175	3,747	46,219	65,200			

*Data for Blacks separately are not available prior to 1969. Blacks included among non-Whites in all years.

Source: National Center for Health Statistics, Vital Statistics of the United States, annual volumes; NCHS, "Advanced Report of Final Natality Statistics" Monthly Vital Statistics Report, Vol. 34, No. 6, September 1985 and Vol. 35, No. 4, July 1986.

TABLE 6.1

Table 6.1 shows the number of births by age of mother for females under 20, by race from 1955 to 1984. In general, the number of births to females under age 20 gradually increased from 1955 through the early 1970s and then began to steadily decline primarily due to changes in the number of women in these age groups. See table 6.2 for data concerning the changes in births relative to the population of young women.

TABLE 6.2 Birth Rates By Age Of Mother, By Race Of Child, United States, 1950-1984 (births per 1,000 women, by age and race)

Year and Race of Child	Age of Mother									
	10-14 Years	15-19 Years			20-24 Years	25-29 Years	30-34 Years	35-39 Years	40-44 Years	45-49 Years
		Total	15-17	18-19						
All Races										
1984	1.2	50.9	31.1	78.3	107.3	108.3	66.5	22.8	3.9	0.2
1983	1.1	51.7	32.0	78.1	108.3	108.7	64.6	22.1	3.8	0.2
1982	1.1	52.9	32.4	80.7	111.3	111.0	64.2	21.1	3.9	0.2
1981	1.1	52.7	32.1	81.7	111.8	112.0	61.4	20.0	3.8	0.2
1980	1.1	53.0	32.5	82.1	115.1	112.9	61.9	19.8	3.9	0.2
1979	1.2	52.3	32.3	81.3	112.8	111.4	60.3	19.5	3.9	0.2
1978	1.2	51.5	32.2	79.8	109.9	108.5	57.8	19.0	3.9	0.2
1977	1.2	52.8	33.9	80.9	112.9	111.0	56.4	19.2	4.2	0.2
1976	1.2	52.8	34.1	80.5	110.3	106.2	53.6	19.0	4.3	0.2
1975	1.3	55.6	36.1	85.0	113.0	108.2	52.3	19.5	4.6	0.3
1974	1.2	57.5	37.3	88.7	117.7	111.5	53.8	20.2	4.8	0.3
1973	1.2	59.3	38.5	91.2	119.7	112.2	55.6	22.1	5.4	0.3
1972	1.2	61.7	39.0	96.9	130.2	117.7	59.8	24.8	6.2	0.4
1971	1.1	64.5	38.2	105.3	150.3	134.1	67.3	28.7	7.1	0.4
1970	1.2	68.3	38.8	114.7	167.8	145.1	73.3	31.7	8.1	0.5
1965	0.8	70.4	--	--	196.8	162.5	95.0	46.4	12.8	0.8
1960	0.8	89.1	--	--	258.1	197.4	112.7	56.2	15.5	0.9
1955	0.9	90.3	--	--	241.6	190.2	116.0	58.6	16.1	1.0
1950	1.0	81.6	--	--	196.6	166.1	103.7	52.9	15.1	1.2

White										
1984	0.6	42.5	23.9	68.1	101.4	107.7	66.1	21.7	3.5	0.2
1983	0.6	43.6	24.8	68.3	102.6	108.0	64.0	21.0	3.5	0.2
1982	0.6	44.6	25.2	70.8	105.9	110.3	63.3	20.0	3.5	0.2
1981	0.5	44.6	25.1	71.9	106.3	111.3	60.2	18.7	3.4	0.2
1980	0.6	44.7	25.2	72.1	109.5	112.4	60.4	18.5	3.4	0.2
1979	0.6	43.7	24.7	71.0	107.0	110.8	59.0	18.3	3.5	0.2
1978	0.6	42.9	24.9	69.4	104.1	107.9	56.6	17.7	3.5	0.2
1977	0.6	44.1	26.1	70.5	107.7	110.9	55.3	18.0	3.8	0.2
1976	0.6	44.1	26.3	70.2	105.3	105.9	52.6	17.8	3.9	0.2
1975	0.6	46.4	28.0	74.0	108.2	108.1	51.3	18.2	4.2	0.2
1974	0.6	47.9	28.7	77.3	113.0	111.8	52.9	18.9	4.4	0.2
1973	0.6	49.0	29.2	79.3	114.4	112.3	54.4	20.7	4.9	0.3
1972	0.5	51.0	29.3	84.3	124.8	117.4	58.4	23.3	5.6	0.3
1971	0.5	53.6	28.5	92.3	144.9	134.0	65.4	26.9	6.4	0.4
1970	0.5	57.4	29.2	101.5	163.4	145.9	71.9	30.0	7.5	0.4
1965	0.3	60.7	--	--	189.8	158.8	91.7	44.1	12.0	0.7
1960	0.4	79.4	--	--	252.8	194.9	109.6	54.0	14.7	0.8
1955	0.3	79.1	--	--	235.8	186.6	114.0	56.7	15.4	0.9
1950	0.4	70.0	--	--	190.4	165.1	102.6	51.4	14.5	1.0
Black										
1984	4.3	95.7	69.7	132.0	137.9	103.2	59.5	24.8	5.1	0.2
1983	4.1	95.5	70.1	130.4	137.7	103.4	59.2	24.7	5.2	0.3
1982	4.1	97.0	71.2	133.3	139.1	106.9	60.4	24.2	5.4	0.4
1981	4.1	97.1	70.6	135.9	141.2	108.3	60.4	24.2	5.6	0.3
1980	4.3	100.0	73.6	138.8	146.3	109.1	62.9	24.5	5.8	0.3
1979	4.6	101.7	75.7	140.4	146.3	108.2	60.7	24.7	6.1	0.4
1978	4.4	100.9	75.0	139.7	143.8	105.4	58.3	24.3	6.1	0.4
1977	4.7	104.7	79.6	142.9	144.4	106.4	57.5	25.4	6.6	0.5
1976	4.7	104.9	80.3	142.5	140.5	101.6	53.6	24.8	6.8	0.5
1975	5.1	111.8	85.6	152.4	142.8	102.2	53.1	25.6	7.5	0.5

TABLE 6.2 (continued)

Year and Race of Child	Age of Mother									
		15-19 Years								
	10-14 Years	Total	15-17	18-19	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40-44 Years	45-49 Years
1974	5.0	116.5	90.0	158.7	146.7	102.2	54.1	27.0	7.6	0.6
1973	5.4	123.1	96.0	166.6	153.1	103.9	58.1	29.4	8.6	0.6
1972	5.1	129.8	99.5	179.5	165.0	112.4	64.0	33.4	9.8	0.7
1971	5.1	134.5	99.4	192.6	186.6	128.0	74.8	38.9	11.6	0.9
1970	5.2	147.7	101.4	204.9	202.7	136.3	79.6	41.9	12.5	1.0
1965	4.3	140.6	--	--	247.8	183.2	114.9	62.7	18.7	1.4
1960	4.3	156.1	--	--	295.4	218.6	137.1	73.9	21.9	1.1

Source: National Center for Health Statistics, Vital Statistics of the United States, annual volumes, see Table 6.1.

TABLE 6.2

Table 6.2 shows the birth rates by age of mother and race of child from 1950 to 1984. Data are from National Center for Health Statistics (NCHS) and U.S. Bureau of Census. In general, there was a decline in the rate of births per 1,000 women between 1950 and 1984 for women aged 15 to 49. The decline was most steep among older women. The birth rate for women aged 15 to 19 declined by 25 percent between 1970 to 1984, from 68.3 to 50.9 births per 1,000 women. Between 1970 and 1984 the birth rate for teenagers aged 15 to 17 declined by about 20 percent (from 38.8 to 31.1 per 1,000) compared to a decline of 32 percent for women aged 18 to 19 (from 114.7 to 78.3 per 1,000).

The birth rates for black teenage women have consistently been at least two times higher than the rates for white women even though there was a decline in the birth rates for both races. For white women in 1984 there were 42.5 births per 1,000 women aged 15 to 19, 24 births per 1,000 women aged 15 to 17 and 68 births per 1,000 women aged 18 to 19. These rates had decreased by 26, 18 and 33 percent respectively from 1970 to 1984. For black women there were about 96 births per 1,000 women aged 15 to 19, 70 per 1,000 for women aged 15 to 17 and 132 per 1,000 for women aged 18 to 19 in 1984. The rates for black women decreased by 35, 31 and 36 percent respectively from 1970 to 1982.

The birth rates for teens aged 10 to 14 are low and remained fairly stable throughout this period. However, for black teenagers this age, the birth rate has been at least seven times higher than the rate for white teenagers in all years.

TABLE 6.3 Number Of Out-Of-Wedlock Births In The United States (estimated) By Age Of Mother: 1955-1984 (females under 20, by race)

	All Races			Whites			Nonwhites			Blacks*		
Year	Under 15	15-17	18-19	Under 15	15-17	18-19	Under 15	15-17	18-19	Under 15	15-17	18-19
1984	9,075	115,355	145,749	3,193	57,980	75,295	5,882	57,375	70,454	5,634	54,062	65,680
1983	8,816	116,625	144,635	3,222	58,132	74,362	5,594	58,493	70,273	5,354	55,191	65,755
1982	8,720	117,696	142,930	3,225	57,848	72,829	5,495	59,848	70,101	5,305	56,608	65,555
1981	8,589	118,608	140,631	3,030	57,881	71,105	5,559	60,727	69,526	5,361	57,882	65,601
1980	9,024	121,900	140,877	3,144	57,761	70,223	5,880	64,139	70,654	5,707	61,204	66,818
1979	9,500	120,000	133,000	3,300	54,300	62,100	6,200	65,900	70,900	6,100	62,900	67,100
1978	9,400	116,500	123,200	3,300	52,500	55,900	6,100	64,000	67,300	5,900	61,200	64,000
1977	10,100	120,900	118,700	3,400	53,800	53,200	6,700	67,100	65,500	6,500	64,400	62,700
1976	10,300	116,500	108,500	3,500	50,000	47,600	6,800	66,500	60,900	6,600	64,100	58,600
1975	11,000	116,800	105,800	3,600	48,900	45,000	7,500	67,900	60,700	7,200	65,500	58,200
1974	10,600	113,000	97,700	3,300	44,800	40,300	7,300	68,300	57,500	7,700	66,100	55,100
1973	10,900	111,300	93,500	3,200	42,400	38,700	7,700	69,000	54,800	7,500	67,000	52,900
1972	9,900	108,500	93,700	2,700	39,900	38,700	7,200	68,600	55,100	7,100	66,700	53,200
1971	9,500	100,800	93,200	2,500	36,200	39,900	7,100	64,700	53,500	6,900	63,100	51,800
1970	9,500	96,100	94,300	2,500	36,200	43,200	7,000	60,000	51,100	6,800	58,400	49,500
1969	8,300	83,300	84,900	2,100	30,800	39,500	6,200	52,500	45,300	6,100	51,200	43,800
1968	7,700	77,900	80,200	1,900	28,400	38,900	5,800	49,500	41,200			
1967	6,900	70,900	73,500	1,700	24,800	35,500	5,200	46,100	38,000			
1966	6,200	65,900	69,800	1,400	23,400	34,100	4,800	42,500	35,800			
1965	6,100	61,700	61,400	1,400	21,500	29,200	4,600	40,200	32,200			
1964	5,800	58,700	52,700	1,400	21,600	23,600	4,400	37,100	29,100			
1963	5,400	51,100	50,700	1,200	17,900	21,900	4,000	31,800	27,500			
1962	5,100	46,100	48,300	1,300	15,500	20,700	3,800	29,700	26,600			
1961	5,200	45,100	48,100	1,400	15,500	20,600	3,800	29,600	27,500			
1960	4,600	43,700	43,400	1,200	15,000	17,800	3,500	28,700	25,600			
1959	4,600	43,100	41,500	1,200	14,400	16,500	3,400	28,600	25,000			
1958	4,400	40,100	39,300	1,200	13,200	15,300	3,300	26,900	24,000			
1957	4,600	39,400	37,100	1,100	12,500	14,400	3,500	26,900	22,700			
1956	4,200	37,000	35,900	1,000	11,400	13,900	3,200	25,600	22,000			
1955	3,900	34,700	34,200	900	10,600	13,100	3,000	24,200	21,100			

*Data for Blacks separately are not available prior to 1969.

Source: National Center for Health Statistics, Vital Statistics of the United States, annual volumes; See Table 6.1.

TABLE 6.3

Table 6.3 shows the total estimated number of out-of-wedlock births for mothers under age 20 from 1955 to 1984. Data are from the National Center for Health Statistics (NCHS).

In general, there was a rise in the number of out of wedlock births to women under age 20 from 1955 to 1984. Among white women, the number of out of wedlock births to women under age 15 rose in 1975 to 3,600 and then declined to 3,225 births in 1981. Out-of-wedlock births to women 15 to 17 and 18 to 19 rose in number throughout this period. There were over five times as many births to single white women in 1984 as in 1955, (10,600 compared to 57,848 for women aged 15 to 17 and 13,100 compared to 72,829 for women aged 18 to 19).

The number of out-of-wedlock births to nonwhite women under age 20 was generally higher than the number to whites; however the magnitude of the difference has declined over time. In 1955, white women less than 15 years of age had 70 percent fewer out of wedlock births than nonwhite women, 900 compared to 3,000 births. By 1984, white women under age 15 had about 46 percent fewer out of wedlock births than non white women, 3,193 versus 5,882 births. The decline in the difference between the number of births to nonwhite and white single women aged 15 to 17 and 18 to 19 was even more dramatic. There were 56 percent fewer births to single white women aged 15 to 17 compared to non-white women in 1955 and only 1 percent fewer in 1984. For women aged 18 to 19 there were 40 percent fewer out-of-wedlock births to whites than nonwhites in 1955, but 7 percent more out-of-wedlock births to whites than nonwhites in 1984.

Among black women, the number of out-of-wedlock births started to decline during the 1970's. The number of births to unmarried black women under age 15 declined 27 percent between the peak in 1974 and 1984, (7,700 compared to 5,634) births. The number of out-of-wedlock births to black women aged 15 to 17 declined by 19 percent from the 1973 peak to 1984, (67,000 to 54,062 births). The number of births to single black women aged 18 to 19 declined by about 2 percent from the peak in 1979 to 1984, (67,100 to 65,680 births).

TABLE 6.4 Birth Rates For Unmarried Women by Age of Mother and Race of Child: United States, 1970-84 (rates are live births to unmarried women per 1,000 unmarried women in specified group, estimated as of July 1)

Years and Race of Child	Total	Age of Mother	
		15-19 Years	
		15-17 Years	18-19 Years
All Races			
1984	30.2	21.9	43.0
1983	29.7	22.1	41.0
1982	28.9	21.5	40.2
1981	28.2	20.9	39.9
1980	27.6	20.6	39.0
1979	26.4	19.9	37.2
1978	24.9	19.1	35.1
1977	25.1	19.8	34.6
1976	23.7	19.0	32.1
1975	23.9	19.3	32.5
1974	23.0	18.8	31.2
1973	22.7	18.7	30.4
1972	22.8	18.5	30.9
1971	22.3	17.5	31.7
1970	22.4	17.1	32.9
White			
1984	19.0	13.5	27.6
1983	18.5	13.5	26.1
1982	17.7	12.9	25.1
1981	17.1	12.4	24.6
1980	16.2	11.8	23.6
1979	14.6	10.8	21.0
1978	13.6	10.3	19.3
1977	13.4	10.5	18.7
1976	12.3	9.7	16.9
1975	12.0	9.6	16.5
1974	11.0	8.8	15.3
1973	10.6	8.4	14.9
1972	10.4	8.0	15.1
1971	10.3	7.4	15.8
1970	10.9	7.5	17.6

TABLE 6.4 (contineud)

Years and Race of Child	Total	Age of Mother	
		15-19 Years	
		15-17 Years	18-19 Years
All Other			
1984	78.3	59.3	106.1
1983	78.3	60.2	104.6
1982	79.2	60.7	107.0
1981	79.2	60.3	109.0
1980	81.7	63.1	111.6
1979	83.9	64.8	115.3
1978	81.2	63.2	111.6
1977	84.0	67.2	112.7
1976	82.5	67.5	108.9
1975	86.3	70.7	114.3
1974	87.3	73.2	113.4
1973	88.5	75.6	112.8
1972	91.8	77.6	119.3
1971	92.0	75.4	125.4
1970	90.8	73.3	126.5
Black			
1984	87.1	66.8	116.2
1983	86.4	67.1	114.0
1982	87.0	67.6	115.8
1981	86.8	66.9	117.6
1980	89.2	69.6	120.2
1979	91.0	71.0	123.3
1978	87.9	68.8	119.6
1977	90.9	73.0	121.7
1976	89.7	73.5	117.9
1975	93.5	76.8	123.8
1974	93.8	78.6	122.2
1973	94.9	81.2	120.5
1972	98.2	82.8	128.2
1971	98.6	80.7	135.2
1970	96.9	77.9	136.4

Source: NCHS Advanced Reported of Natality Statistics 1984, Monthly Vital Statistics Report, Vol 35, No. 4, July 1986.

TABLE 6.4

Table 6.4 presents birth rates for unmarried women by age and race for 1970 to 1984. For all women age 15 to 19, out-of-wedlock birth rates rose from 22.4 births in 1970 to 30.2 births per 1,000 women in 1984, a 34.8 percent increase. The increase in out-of-wedlock birth rates was slightly larger for women age 15 to 17 than for women age 18 to 19, a 28.1 and 30.7 percent increase respectively. Throughout this period, however, out-of-wedlock birth rates for women age 18 to 19 were almost double the rates for women age 15 to 17. In 1984, the out-of-wedlock birth rate was 21.9 births per 1,000 unmarried 15 to 17 year old women compared to 43.0 births per 1,000 unmarried 18 to 19 year old women.

The overall increase in out-of-wedlock birth rates for women age 15 to 19 was due to increased rates of out-of-wedlock child-bearing among white adolescents. The birth rate for unmarried white women aged 15 to 19 rose from 10.9 to 19.0 births per 1,000 unmarried women from 1970 to 1984, a 74 percent increase. For nonwhite and black unmarried women, the birth rates fell from 90.8 to 78.3 and 96.9 to 87.1 births per 1,000 unmarried women, decreases of 14 and 11 percent respectively.

Despite this trend, there were consistently more out-of-wedlock births per 1,000 unmarried nonwhite teenage women than per 1,000 white women. In 1984, there were 13.5 out-of-wedlock births to white women age 15 to 17 compared to 59.3 per 1,000 nonwhite women. For women age 18 to 19 there were 27.6 births per 1,000 white women compared to 106.1 per 1,000 nonwhite women.

TABLE 6.5 Live Births By Age Of Father, Age Of Mother, And Race Of Child: United States, 1984 (based on 100 percent of births in 46 states and on a 50-percent sample of births in four states and the District of Columbia)

Age of Mother And Race of Child	Total	Age of Father											
		< 15 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40-44 Years	45-49 Years	50-54 Years	55+ Years	Not Stated	Total Reported
All Races[1]													
All ages	3,669,141	232	109,032	696,207	1,067,147	805,875	355,843	109,468	32,044	11,298	7,092	474,903	3,178,241
Under 15 years	9,965	84	2,088	698	113	28	7	5	2	--	6	6,934	2,967
15-19 years	469,682	113	87,179	167,940	34,011	6,976	2,107	770	257	117	83	170,129	317,329
20-24 years	1,141,578	10	18,123	445,701	381,915	89,465	23,859	7,198	2,210	895	671	171,531	994,817
25-29 years	1,165,711	13	1,330	70,235	562,980	341,880	80,390	20,411	5,863	2,128	1,377	79,104	1,074,015
30-34 years	658,496	9	260	9,836	78,103	332,500	156,177	34,113	9,123	3,243	1,956	33,176	594,353
35-39 years	195,755	3	47	1,610	9,233	33,032	88,689	36,863	9,479	3,130	1,979	11,690	169,943
40-44 years	26,846	--	5	177	770	1,956	4,543	9,934	4,739	1,575	922	2,225	23,777
45-49 years	1,108	--	--	10	22	38	71	174	371	210	98	114	1,040
White													
All ages	2,923,502	104	83,206	580,835	918,970	689,253	298,184	87,662	24,147	8,114	4,768	228,259	2,685,457
Under 15 years	3,959	27	1,014	513	77	19	5	4	2	-	-	2,298	1,643
15-19 years	320,953	59	66,154	136,601	27,477	5,500	1,683	581	201	74	52	82,571	255,022
20-24 years	898,919	5	14,701	375,941	324,933	72,976	19,184	5,502	1,598	629	442	83,008	839,134
25-29 years	969,061	8	1,084	58,350	492,679	291,309	65,709	16,096	4,236	1,445	889	37,256	922,541
30-34 years	549,595	5	211	7,952	65,751	290,289	132,049	27,079	6,847	2,300	1,266	15,846	506,229
35-39 years	159,246	--	37	1,315	7,418	27,566	75,803	30,119	7,236	2,325	1,390	6,037	141,581
40-44 years	20,974	--	5	156	618	1,564	3,701	8,143	3,744	1,196	664	1,183	18,990
45-49 years	795	--	--	7	17	30	50	138	283	145	65	60	752

TABLE 6.5 (continued)

Age of Mother And Race of Child	Total	Age of Father											
		< 15 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40-44 Years	45-49 Years	50-54 Years	55+ Years	Not Stated	Total Reported
Black													
All Ages	592,745	112	22,351	93,273	109,943	75,722	35,918	14,377	5,565	2,295	1,646	231,543	358,329
Under 15 years	5,720	56	1,012	145	34	7	2	1	--	--	5	4,458	1,207
15-19 years	134,392	45	18,373	26,244	5,099	1,117	341	151	54	39	30	82,899	52,266
20-24 years	203,562	5	2,745	56,618	43,783	11,646	3,426	1,345	490	224	173	83,107	121,198
25-29 years	147,111	3	189	8,829	51,429	32,832	9,407	3,129	1,253	526	381	39,133	106,524
30-34 years	73,858	2	30	1,245	8,322	26,571	14,502	4,525	1,629	666	480	15,886	56,070
35-39 years	24,028	1	2	176	1,177	3,305	7,723	4,099	1,461	574	401	5,109	17,801
40-44 years	3,906	--	--	16	96	237	507	1,108	637	233	165	907	3,108
45-49 years	168	--	--	--	3	7	10	19	41	33	11	44	155

[1]Includes races other than White and Black.

Source: NCHS, "Advanced Report of Natality Statistics 1983," Monthly Vital Statistics Report, Vol. 35, No. 4, July 1986.

TABLE 6.5

Table 6.5 presents data on the number of live births by the age of father, age of mother and the race of the child for 1984.

Caution should be used when interpreting this table because the distribution of the age of father by the age of the mother among those not reporting is not known. About 70 percent of mothers under age 15 and 36 percent of mothers age 15 to 19 did not report the age of the father. Among white teenagers 58 percent of those under age 15 and about 26 percent of those aged 15 to 19 did not report the age of the father of their child. Among black teenagers, 78 percent of those under age 15 and 62 percent of those aged 15 to 19 did not report the age of the father of their child. These data are from the National Center for Health Statistics (NCHS).

This table shows that the majority of women under age 20 giving birth and reporting the age of the father have partners older than themselves. Nearly all women under age 15, 97 percent, had partners aged 15 or over and 28 percent had partners over age 19. Among mothers aged 15 to 19, 71 percent had partners over age 19 and 15 percent had partners over age 24.

White teenage mothers are more likely to report having older partners than black mothers. Among white mothers under age 15, 37 percent reported having partners over age 19. In comparison, among black mothers under age 15, 15 percent reported having partners over age 19. Among both black and white women aged 15 to 19 reporting the father's age, 72 percent of the white mothers aged 15 to 19 had partners over age 24 compared to 64 percent of the black mothers aged 15 to 19.

TABLF 6.6 Percent Of All First Births And Total Births In Which The Mother's Age Was Under 20, Under 18 Or Under 15, By Race, United States, 1950-1984

	All Races*						White						Black**					
	First Births			All Births			First Births			All Births			First Births			All Births		
Age of Mother	<15	≤17	<20	<15	≤17	<20	<15	≤17	<20	<15	≤17	<20	<15	≤17	<20	<15	≤17	<20
Year																		
1984	0.6	10	24	0.3	5	13	0.3	8	21	0.1	4	11	2	22	44	1.0	11	24
1983	0.6	10	25	0.3	5	14	0.3	8	22	0.1	4	12	2	23	45	0.9	11	24
1982	0.6	11	26	0.3	5	14	0.3	8	23	0.1	4	12	2	23	45	0.9	11	25
1981	0.6	11	27	0.3	5	15	0.3	9	24	0.1	4	13	2	24	46	1	11	25
1980	0.6	11	28	0.3	6	16	0.3	9	25	0.1	5	14	2	26	48	1	12	26
1975	0.9	16	35	0.4	8	19	0.5	13	31	0.2	6	16	3	32	57	1	16	33
1970	0.7	14	36	0.3	6	18	0.3	11	32	0.1	5	15	3	32	59	1	15	31
1965	0.6	14	38	0.2	5	16	0.2	11	35	0.1	4	14	3	33	59	0.9	12	22
1960	0.6	14	37	0.2	4	14	0.3	12	34	0.1	4	13	3	30	54	0.6	9	20
1955	0.5	12	31	0.1	4	12	0.2	9	28	0.1	3	11	3	28	51	0.6	8	20
1950	0.4	10	27	0.1	4	12	0.2	8	24	0.1	3	10	3	28	50	0.7	9	21

*Includes races other than white and black.

**Percentages for the years 1950, 1955 and 1960 pertain to non-whites rather than blacks due to insufficient data on live black births.

Source: National Center for Health Statistics, calculated from Vital Statistics of the United States, annual volumes; NCHS "Advanced Final Natality Report", Monthly Vital Statistics Report, Vol. 34, No. 6, September 1985 and Vol. 35, No. 4, July 1986.

TABLE 6.6

The percent of all first births and total births in which the mother's age was under 20, under 18 or under 15, by race, is shown in Table 6.6.

Data are from the National Center for Health Statistics (NCHS). There are four important points to make about these data. First, the proportion of first births to women under age 20 is consistently higher than the percent of all births to women under age 20. Second, both proportions are due not only to the rate of childbearing among teens, but the birth rates of older women and to the size of population groups below and above age 20. Third, there was an increase in the proportion of first births and all births to women under age 20 from 1950 to the early 1970s. By 1984 the percent of first births to women under age 20 had declined; but the percent of all births to women under age 20 remained higher than in 1950. Fourth, black teens under age 20 consistently made up a larger proportion of both the first births and all births to black women than white teens under age 20 did among whites. Just under half of all black first-born children has a mother not yet 20 years of age.

TABLE 6.7 Number and Percent of All Live Births to Women Under Age 20 by Hispanic Origin of Mother: Total of 23 Reporting States and the District of Columbia, 1984

Age of Mother	All Origins	Mother of Hispanic Origin						Non-Hispanic	Not Stated
		Total	Mexican	Puerto Rican	Cuban	Central And South American	Other		
All ages	2,230,815	346,986	225,767	34,219	9,477	36,401	41,122	1,791,949	91,880
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
Under 15	6,318	1,242	860	179	9	34	160	4,830	246
	(0.3)	(0.4)	(0.4)	(0.5)	(0.1)	(0.1)	(0.4)	(0.3)	(0.3)
15-19 years	288,346	57,717	39,712	7,112	766	2,930	7,197	218,930	11,699
	(12.9)	(16.6)	(17.6)	(20.8)	(8.1)	(8.0)	(17.5)	(12.2)	(12.7)
15 years	15,217	3,300	2,322	366	25	119	468	11,355	562
	(0.7)	(1.0)	(1.0)	(1.1)	(0.3)	(0.3)	(1.1)	(0.6)	(0.6)
16 years	33.080	7,239	5,127	877	73	251	911	24,530	1,311
	(1.5)	(2.1)	(2.3)	(2.6)	(0.8)	(0.7)	(2.2)	(1.4)	(1.4)
17 years	54.817	11,395	7,961	1,493	128	467	1,347	41,125	2,297
	(2.5)	(3.3)	(3.5)	(4.4)	(1.4)	(1.3)	(3.3)	(2.3)	(2.5)
18 years	79,502	15,909	10,851	2,014	208	858	1,978	60,437	3,236
	(3.6)	(4.6)	(4.8)	(5.9)	(2.2)	(2.4)	(4.8)	(3.4)	(3.5)
19 years	105,650	19,874	13,451	2,363	332	1,235	2,493	81,483	4,293
	(4.7)	(5.7)	(6.0)	(6.9)	(3.5)	(3.4)	(6.1)	(4.5)	(4.7)

Note: Data are for births to residents of the 23 states and the District of Columbia reporting ethnic of Hispanic origin, regardless of where the births occurred. Births occurring in non-reporting states to residents of the 23 reporting states are included in the "not stated" category.

Percentages do not total to 100.0 because births to women ages 20 and over are not shown.

Approximately 4 percent of all mothers did not report their ethnicity as Hispanic or non Hispanic.

Source: Unpublished tabulations from the Division of Vital Statistics, National Center for Health Statistics, January 27, 1986.

TABLE 6.7

Table 6.7 presents the number and percent of all live births to women under age 20 by Hispanic origin of mother for 1984. Data are from the National Center for Health Statistics (NCHS).

These data indicate that of all births to adolescent mothers of Hispanic origin most are to mothers of Mexican origin. There were 39,712 births to mothers of Mexican origin aged 15 to 19 compared to 7,112 births to Puerto Rican mothers aged 15 to 19, 2,930 births to Central and South American mothers aged 15 to 19 and 766 to Cuban mothers aged 15 to 19.

Births to women under age 20 constituted 17 percent of births to all Hispanic origin mothers compared to 13.2 percent of births to non-Hispanic mothers in these states. Among mothers of Hispanic origin, births to Puerto Rican women aged 15 to 19 made up 21.3 percent of all births to Puerto Rican mothers and births to women under age 20 made up 18.0 percent of all births to Mexican mothers.

TABLE 6.8 Number and Percent of All Out of Wedlock Births to Women Under Age 20 by Hispanic Origin of Mother: Total of 23 Reporting States and the District of Columbia, 1984

Age of Mother	All Origins	Mother of Hispanic Origin						Non-Hispanic	Not Stated
		Total	Mexican	Puerto Rican	Cuban	Central And South American	Other		
All Ages	489,400	98,273	54,617	17,397	1,534	12,381	12,350	372,586	18,541
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
Under 15	5,688	972	617	177	9	33	136	4,494	222
	(1.2)	(1.0)	(1.1)	(1.0)	(0.6)	(0.3)	(1.1)	(1.2)	(1.2)
15-19	160,500	28,577	17,103	5,179	288	1,704	4,303	125,712	6,211
	(32.8)	(29.1)	(31.3)	(29.8)	(18.8)	(13.8)	(34.8)	(33.7)	(33.5)
15-17	70,863	12,957	8,099	2,217	112	587	1,942	55,123	2,783
	(14.5)	(13.2)	(14.8)	(12.7)	(7.3)	(4.7)	(15.7)	(14.8)	(15.0)
18-19	89,637	15,620	9,004	2,962	176	1,117	2,361	70,589	3,428
	(18.3)	(15.9)	(16.5)	(17.0)	(11.5)	(9.1)	(19.1)	(18.9)	(18.5)

Note: Data are for births to residents of the 23 states and the District of Columbia regardless of where the births occurred. Births occurring in non-reporting states to residents of the 23 reporting states are included in the "non-stated" category.

Approximately 4 percent of all mothers did not report their ethnicity as Hispanic or non-Hispanic.

Source: Unpublished tabulations from the Division of Vital Statistics, National Center for Health Statistics, January 27, 1986.

TABLE 6.8

Table 6.8 presents the number and percent of all out-of-wedlock births to women under age 20 by Hispanic origin of mother for 1984. Data are from the National Center for Health Statistics (NCHS).

These data indicate that the largest number of out-of-wedlock births to adolescent women of Hispanic origin was to Mexican women. There were 28,577 out-of-wedlock births to Hispanic mothers aged 15 to 19 in 1984; 17,103 of those births were to Mexican women aged 15 to 19.

Out-of-wedlock births made up 10 percent of all births to Hispanic women aged 15 to 19. In addition, Hispanic women aged 15 to 19 accounted for 18 percent of all nonmarital births in this age group.

Overall, out-of-wedlock births to non-Hispanic women aged 15 to 19 accounted for a slightly larger proportion of all out-of-wedlock births among non-Hispanics than among Hispanics, 33.7 percent compared to 29.1 percent respectively.

TABLE 6.9 Percentage Of Mothers Receiving Inadequate Prenatal Care (third trimester only or no care), By Age Group According To Race And Ethnicity, Residence And Marital Status, National Natality Survey 1980

	Age Group		
	<20	20-24	25
Total	9.8	4.9	2.9
Race/Ethnicity			
Black (non-Hispanic)	12.8	6.4	3.6
White (non-Hispanic)	8.3	3.9	2.5
Hispanic	11.9	11.4	6.4
Residence			
Metropolitan	10.3	4.8	2.7
Non-metropolitan	8.9	5.3	3.4
Marital Status			
Married	5.0	3.4	2.5
Unmarried	14.8	11.4	7.0

Source: S. Singh, A. Torres and J.D. Forrest, "The Need for Prenatal Care in the United States: Evidence from the 1980 National Natality Survey", Family Planning Perspectives, Vol. 17, No. 3, 1985.

TABLE 6.9

Table 6.9 shows the percentage of mothers receiving inadequate prenatal care (third trimester only or no care), by age group according to race and ethnicity, residence, and marital status. The data are from the 1980 National Natality Survey (NNS).

These data indicate that in 1980, 9.8 percent of all mothers under age 20 received inadequate prenatal care, compared to 4.9 percent of mothers aged 20 to 24 and 2.9 percent of mothers aged 25 and over. Black mothers under age 20 were the most likely to receive inadequate prenatal care, 12.8 percent compared to 11.9 percent of Hispanic and 8.3 percent of white mothers, even though Hispanic mothers of other ages were more likely than black or white women to receive inadequate care. Also, unmarried mothers of all ages were more likely than married mothers to have had inadequate prenatal care.

TABLE 6.10 Number and Percent Of Live Births With Low Birth Weight and Live Births by Birth Weight, by Age of Mother and Race of Child: United States, 1983; Based On 100 Percent Of Births In Selected States And On A 50-percent Sample Of Births In All Other States

Age of Mother and Race of Child	Low Birth Weight[1]		Total
	Number	Percent	
All Races			
All ages	246,105	6.7	3,669,141
Under 15 years	1,350	13.6	9,965
15-19 years	43,817	9.3	469,682
15 years	2,744	11.4	24,142
16 years	5,789	10.9	53,178
17 years	8,719	9.8	89,424
18 years	12,087	9.3	130,159
19 years	14,478	8.4	172,779
20-24 years	78,444	6.9	1,141,578
25-29 years	68,224	5.9	1,165,711
30-34 years	38,762	5.9	658,496
35-39 years	13,180	6.7	195,755
40-44 years	2,220	8.3	26,846
45-49 years	108	9.8	1,108
White			
All ages	163,117	5.6	2,923,502
Under 15 years	428	10.8	3,959
15-19 years	24,503	7.6	320,953
15 years	1,187	9.2	12,869
16 years	2,981	9.2	32,529
17 years	4,794	8.1	59,618
18 years	6,968	7.7	90,470
19 years	8,573	6.8	125,467
20-24 years	51,122	5.7	898,919
25-29 years	48,138	5.0	969,061
30-34 years	28,013	5.1	549,595
35-39 years	9,302	5.9	159,246
40-44 years	1,540	7.4	20,974
45-49 years	71	9.0	795
All Other			
All ages	82,988	11.1	745,639
Under 15 years	922	15.4	6,006
15-19 years	19,314	13.0	148,729
15 years	1,557	13.8	11,273
16 years	2,808	13.6	20,649
17 years	3,925	13.2	29,806
18 years	5,119	12.9	39,689
19 years	5,905	12.5	47,312
20-24 years	27,322	11.3	242,659
25-29 years	20,086	10.2	196,650
30-34 years	10,749	9.9	108,901
35-39 years	3,878	10.6	36,509
40-44 years	680	11.6	5,872
45-49 years	37	11.9	313
Black			
All ages	73,178	12.4	592,745
Under 15 years	891	15.6	5,720
15-19 years	18,147	13.5	134,392
15 years	1,501	14.1	10,637
16 years	2,678	14.0	19,158
17 years	3,703	13.7	27,112
18 years	4,782	13.4	35,656
19 years	5,483	13.1	41,829
20-24 years	24,699	12.2	203,562
25-29 years	17,231	11.7	147,111
30-34 years	8,640	11.7	73,858
35-39 years	3,018	12.6	24,028
40-44 years	530	13.6	3,906
45-49 years	22	13.1	168

[1]Less than 2,500 grams.

Sources: NCHS, "Advanced Final Natality by Statistics, 1983", Monthly Vital Statistics Report, Vol. 35, No. 4, July 1986.

TABLE 6.10

Table 6.10 shows the number and percent of babies with low birth weight by age and race of mother in 1984. Data are from the National Center for Health Statistics.

In general, mothers less than age 20 and aged 40 to 49 were more likely than women aged 20 to 39 to have babies with low birth weights. Over 13 percent of the babies born to women under age 15 had low birth rates, more than 9 percent of those born to women aged 15 to 19, 8.3 percent of those born to women aged 40 to 44, and almost 10 percent born to women aged 45 to 49.

Black babies born to mothers of all ages were more likely to have low birth weights than white babies. About 6 percent of all white babies had low birth weights compared to over 11 percent of all black babies. Over 10 percent of the white babies born to teens less than age 15 and 7.6 percent of the white babies born to teens aged 15 to 19 had low birth weights compared to 15.4 percent of black babies born to teens under age 15 and 13.0 percent of those born to teens aged 15 to 19.

TABLE 6.11 Estimated Cumulative Percent of Women Aged 15 to 19 Ever Experiencing A First Birth By Single Year of Age, Race And Ethnicity*, 1982 National Survey of Family Growth

Age[1]	Cumulative Percent Having a First Birth
Total Sample	
15	0.2
16	3.2
17	5.5
18	12.0
19	17.1
N 1888	
Whites	
15	--
16	2.2
17	3.3
18	10.7
19	13.2
N 1253	
Blacks	
15	1.2
16	7.8
17	15.5
18	20.3
19	39.8
N 581	
Hispanics	
15	--
16	--
17	5.1
18	29.6
19	47.0
N 159	

--Cell sizes were less than 20.

*Hispanic persons may be of any race, and whites and blacks may include Hispanic persons.

[1]Single years of age refer to the midpoints in the age intervals, e.g., 15 means 15.5 years.

Source: Special tabulations from the 1982 National Survey of Family Growth, conducted by the National Center for Health Statistics, DHHS.

TABLE 6.11

Table 6.11 presents the estimated cumulative percent of women aged 15 to 19 ever experiencing a first birth by age, race and ethnicity. The data are from the 1982 National Survey of Family Growth (NSFG).

These data indicate that among all women, 17.1 percent had a first birth before age 20. The estimated proportion of women having a first birth before age 20 was the highest for Hispanic women, 47.0 percent, compared to 39.8 percent for black women and 13.2 percent for white women. Most of these births occur at ages 18 and 19. At age 17, blacks are 3 times more likely than Hispanic women to have had a birth.

TABLE 6.12 Cumulative Percent Having A First Birth By Single Year Of Age, Race And Ethnicity[1], And By Mother's Education, Education in 1979; 1983 National Longitudinal Survey of Youth

	Total Sample					
	Males			Females		
	Respondent's Mother's Education					
Age*	<HS	=HS	≥HS	<HS	=HS	≥HS
Total Sample						
15	.1	.1	0	.7	.3	.1
16	.4	.2	.1	3.4	.9	.2
17	1.2	.6	.1	9.1	2.9	1.6
18	3.1	1.4	.5	16.5	6.0	2.5
19	6.5	3.2	1.0	24.3	10.2	5.2
20	11.7	5.8	2.7	34.6	16.0	7.5
N	1808	1878	790	1975	1791	756
Whites						
15	0	0	0	.5	.2	0
16	.2	0	0	2.1	.7	0
17	.4	.2	0	6.4	2.1	1.1
18	2.0	.6	.3	13.1	4.4	1.7
19	4.5	2.1	.6	19.8	8.3	4.3
20	9.1	4.8	2.1	30.9	13.9	6.3
N	814	1359	592	833	1288	577
	<HS		≥HS	<HS		≥HS
Blacks						
15	.6		.7	1.6		.9
16	1.0		1.5	7.5		2.7
17	4.0		3.5	17.9		9.2
18	7.0		5.8	27.3		17.0
19	11.9		10.4	38.2		22.3
20	18.4		13.1	47.1		28.5
N	541		525	595		499
Hispanics						
15	--		--	.4		--
16	.4		--	3.2		.7
17	.6		.4	8.2		.7
18	2.8		2.8	16.3		3.7
19	7.6		4.6	23.9		11.7
20	14.2		6.1	33.1		18.9
N	453		192	496		183

*Percentages refer to birthday for specified ages, e.g., 15 means by 15th birthday or by end of age 14.

[1]Hispanic Persons may be of any race.

Note: Sample is limited to respondents age 20 and over at 1983 survey date.

Source: Special Tabulations from the 1983 National Longitidunal Survey of Youth, Center for Human Resource Research, Ohio State University.

TABLE 6.12

Table 6.12 displays the cumulative percent reporting a first birth by mother's education. Data are from the 1983 National Longitudinal Survey of Youth (NLS).

Males were less likely than females to report having a child by age 20, despite the higher percent of males than females who were sexually active by age 20. Also, blacks were more likely than whites or hispanics to report a first birth by age 20 regardless of their mother's education. In general, however, adolescent males whose mothers had less than high school educations were more likely to have child by age 20 than those whose mother's education was high school or more. Of all males, the proportion with a child was about 12 percent among those whose mother's education was less than high school, less than 6 percent among those whose mothers had completed high school, and less than 3 percent among males whose mothers had gone beyond high school education.

Among the females, the proportion reporting a birth by age 20 was about 35 percent among those whose mother's education was less than high school, 16 percent of those whose mothers had a high school education and 8 percent among those whose mothers had more than a high school education. Blacks were more likely to report having a birth, regardless of the mother's education.

TABLE 6.13 Infant Mortality Rates (deaths at less one year of age per 1,000 live births) By Age Of Mother, U.S. 1960 Study Of Infant Mortality From Linked Records And 1980 National Natality Survey/National Death Index (NNS/NDI)

	1960 Study of of Linked Records	1980 NNS/NDI		
Age of Mother	Rate	Rate	Standard Error	Percent Decline
Under 20 years	33.1	17.4	2.4	47.4
20-24	24.2	12.5	1.3	48.3
25-29	22.4	9.8	1.3	56.3
30-34	23.7	14.7	2.5	38.0
35+ years	26.7	18.4*	7.7	31.1

*Infant mortality rates based on less than 30 sample cases do not meet standards of reliability or precision.

Source: K.G. Keppel, P.J. Placek, G.A. Simpson and S.S. Kessel "Infant Mortality Rates from the 1980 National Natality Survey and Twenty Year Trend Comparisons" NCHS, Unpublished paper, 1985.

TABLE 6.13

Table 6.13 presents infant mortality rates by age of mother for 1960 and 1980. The 1960 data are from the Study of Infant Mortality From Linked Records and the 1980 data are from the National Natality Survey/National Death Index.

These data indicate that in 1960 mothers under age 20 had the highest infant mortality rate, 33.1 infant deaths per 1,000 live births. In 1980, the infant mortality rate for mothers under age 20 was 17.4 deaths per 1,000 births, a 47.4 percent decline. The infant mortality rates in 1980 for mothers under age 20 were still higher than for mothers aged 20 to 34, despite the overall decline in U.S. infant mortality rates. The rate for mothers over age 35 is based on too few cases to be a reliable estimate.

VII. ADOPTION OF CHILDREN BORN TO ADOLESCENTS

This section presents information on adolescent placement for adoption of premarital births, by age and race of the mother. There is no national system for the collection of data on adoptions or the characteristics of mothers who relinquish children for adoption. The data presented here are from the National Survey of Family Growth, National Survey of Young Women (NSYW), and the State of California. Problems with these data include under-reporting and incomplete information on characteristics of the mothers relinquishing children for adoption. These data, however, do demonstrate the declining tendency of adolescents to give up a child born out of wedlock.

TABLE 7.1 Percentage Distribution Of Premarital Live Births Resulting From First Pregnancies Of Women Aged 15-19 At Interview, By Living Arrangements Of Baby And Race Of Mother: 1982, 1976, and 1971

Living Arrangements Of Baby	Percentage Distribution								
	All Races			White and Other			Black		
	1982	1976	1971	1982	1976	1971	1982	1976	1971
All Births (number in sample)	133	148	259	50	25	39	83	123	220
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
In mother's household	92.6	93.3	85.6	91.1	87.2	72.2	94.7	96.8	92.4
With relatives or friends[a]	2.5	1.0	4.7	1.5	2.9	5.8	4.0	0.0	4.2
Adopted	4.6	2.6	7.6	7.4	7.0	18.4	0.7	0.0	2.0
No longer living	0.3	3.1	2.1	0.0	2.9	3.6	0.6	3.2	1.4

[a]"Friends" was a valid code in the 1971 and 1976 surveys, but not in the 1982 survey.

Source: C.A. Bachrach, "Adoption Plans, Adopted Children, and Adopted Mothers", Journal of Marriage and the Family, 48 (May 1986): 243 - 253. Reprinted by permission.

TABLE 7.1

Table 7.1 shows the percentage distribution of premarital live births resulting from first pregnancies to women aged 15 to 19 by the living arrangements of baby and the race of the mother for 1982, 1976, and 1971. It should be noted that under-reporting is presumed on survey questions concerning relinquishment for adoption; however, the extent of under-reporting cannot be estimated in the absence of data from any other reporting system. The data for 1976 and 1971 are from the National Surveys of Young Women. The 1982 data are from the 1982 National Survey of Family Growth. (NSFG)

Among women of all races the proportion of women aged 15 to 19 reporting that the child resulting from their first premarital pregnancy was adopted was lower in 1982 than in 1971, 4.6 percent in 1982 compared to 7.6 percent in 1971. Among white and other women (nonblack women) aged 15 to 19, the proportion declined from 18.4 percent in 1971 to 7.4 percent in 1982. Among black women aged 15 to 19 the proportion declined from 2 percent in 1971 to less than 1 percent in 1982.

TABLE 7.2 Percentage Of Babies Born Premaritally To Women 15-44 Years Of Age At Interview Who Were Placed For Adoption By Age Of Mother At Birth Of Child And Race, 1982 National Survey of Family Growth

	Percentage Placed for Adoption		
	All Races	White	Black
All Births	6.2 (N=8,455)	12.2 (N=3,886)	0.4 (N=4,426)
Age of Mother at Birth			
17 or younger	8.1	17.2	1.0
18-19	4.6	10.1	0.0
20-44	5.9	10.9	0.2
Year of Birth			
Before 1973	8.5	19.5	0.7
1973 or later	4.6	8.0	0.1

Source: C.A. Bachrach, "Adoptive Plans, Adopted Children, and Adopted Mothers", Journal of Marriage and the Family, 48 (May 1986): 243-253. Reprinted by permission.

TABLE 7.2

Table 7.2 shows the proportion of babies born to unmarried women (aged 15 to 44 at the date of the interview) who were placed for adoption by the age of the mother at the birth of the child according to race. (Again, it should be noted that under-reporting of adoption is likely.) Data are from the 1982 National Survey of Family Growth (NSFG).

A higher proportion of white women had placed a child born premaritally for adoption than black women, 12.2 percent compared to less than 1 percent. Among white women who were age 17 or younger at the birth of the child, 17.2 percent placed the child for adoption compared to 1 percent of black women who were age 17 or younger at the birth of the child.

Of women who had a premarital birth before 1973, 19.5 percent of the white women and .7 percent of black women placed the child for adoption. Of women who had a premarital birth during 1973 or later, 8 percent of the white women and .1 percent of the black women placed the child for adoption.

TABLE 7.3 Adoptions by Type* and Age of Mother, State of California Selected Years, 1967 to 1983

Year	Age of Mother	Number of Relinquishment[1] Adoptions	% of Total Relinquishment Adoptions	Number of Independent[2] Adoptions	% of Total Independent Adoptions
FY'1982-83	All Ages	1,831	100.0	1,534	100.0
	10-14	47	2.6	32	2.1
	15-16	165	9.0	159	11.0
	17-18	288	15.7	307	20.0
	<19	500	27.3	498	33.1
FY'1981-82	All Ages	1,991	100.0	1,534	100.0
	10-14	36	1.8	32	2.1
	15-16	204	10.2	169	11.0
	17-18	308	15.5	307	20.0
	<19	548	27.5	508	33.1
FY'1980-81	All Ages	1,937	100.0	n.a.	n.a.
	10-14	34	1.8		
	15-16	208	10.7		
	17-18	324	16.7		
	<19	566	29.2		
1979 (Jan-Dec)	All Ages	2,170	100.0	n.a.	n.a.
	10-14	50	2.3		
	15-19	857	39.5		
	<20	907	41.8		
1976 (Jan-Dec)	All Ages	2,251	100.0	n.a.	n.a.
	10-14	68	3.0		
	15-19	924	41.1		
	<20	992	44.1		
1975 (Jan-Dec)	All Ages	2,638	100.0	n.a.	n.a.
	10-14	62	2.4		
	15-19	1,133	42.8		
	<20	1,195	45.3		
1969 (Jan-Dec)	All Ages	8,151	100.0	n.a.	n.a.
	10-14	87	1.1		
	15-19	3,476	42.6		
	<20	3,563	43.7		
1967 (Jan-Dec)	All Ages	--	--	8,195	100.0
	10-14	n.a.	n.a.	n.a.	n.a.
	15-19	n.a.	n.a.	n.a.	n.a.
	<20	n.a.	n.a.	3,419	41.7

[1]Relinquishment is defined to include cases in which the child is turned over to a public or private adoption agency for placement.

[2]Independent adoptions are those in which the mother of the child arranges the adoption independent of or through an adoption agency. The data for independent adoptions are collected in survey form and the exact response rate is not known.

n.a. - not available.

*Foreign born adoptions are not included under either relinquishment or independent adoptions. Adoptions by relatives of the child are included in both totals and represent approximately 15 percent of the total number of adoptions for both categories although they are not tabulated separately from nonrelative adoptions.

Source: Program Information Series Reports; Department of Social Services, California, 1985.

TABLE 7.3

Table 7.3 shows the number and percentage distribution regarding relinquishment and independent adoptions by the age of the mother, for the State of California. Data on adoptions are collected by the Department of Social Services in California.

The important features of these data are the trends in the decreasing number of total adoptions and the declining proportion of adopted babies whose birth mothers were less than age 19 or 20. In 1969 there were 8,151 relinquishment adoptions and 3,563, or 44 percent, of those babies were born to mothers under age 20. In FY'1982-83, there were only 1,831 total relinquishment adoptions and only 500, or 27 percent of those babies were born to mothers less than age 19.

Although data are available for fewer years regarding independent adoptions, the same trend is evident. In 1967 there were 8,195 adoptions and 3,419, or 42 percent, of those babies were born to mothers less than age 20, while in FY'1982-83 there were only 1,534 independent adoptions and 498, or 33 percent, of those babies born to mothers under age 19.

VIII. ADOLESCENT PARENTS

This section presents information on characteristics of adolescent parents. Data on educational attainment, subsequent pregnancies, and social and economic status of the parents are shown. These data are from the 1983 National Longitudinal Survey (NLS) and 1982 National Survey of Family Growth (NSFG). The major controls used in these tables are race and age and no tests of statistical significance are presented. These data are included to provide a description of the characteristics of adolescent parents. Caution should be used in drawing conclusions from these tables on consequences of adolescent parenthood.

TABLE 8.1 Percent of Women Aged 20-29 Completing High School By Age At Birth Of First Child, Race And Ethnicity*, 1982 National Survey of Family Growth

	Age at First Birth	Percent of Women 20-29 Completing Less Than 12 Years of Schooling: Percent	Number of Women
Total Mothers		25	(1739)
	Under 15	68	(42)
	15-17	51	(424)
	18-19	34	(467)
	20-21	19	(358)
	22-24	10	(312)
	25-29	5	(133)
Women with no births		7	(1252)
White	Total Mothers	26	(764)
	Under 15	--	(2)
	15-17	55	(116)
	18-19	39	(170)
	20-21	21	(181)
	22-24	10	(204)
	25-29	5	(90)
Women with no births		6	(820)
Black	Total Mothers	26	(942)
	Under 15	62	(40)
	15-17	43	(304)
	18-19	23	(286)
	20-21	11	(172)
	22-24	8	(101)
	25-29	0	(37)
Women with no births		9	(404)
Hispanic	Total Mothers	58	(113)
	Under 15	--	(0)
	15-17	76	(23)
	18-19	69	(21)
	20-21	55	(38)
	22-24	39	(24)
	25-29	--	(7)
Women with no births		17	(51)

-- Cell sizes were less than 20.

*Hispanic Persons may be of any race, and whites and blacks may include Hispanic persons.

Source: Special tabulations from the 1982 National Survey of Family Growth, Cycle III, conducted by the National Center for Health Statistics, DHHS.

TABLE 8.1

Table 8.1 shows the percent of women aged 20 to 29 completing less than 12 years of schooling by age at first birth, race and ethnicity. The data are from the 1982 National Survey of Family Growth (NSFG).

In general, women who had a first birth before age 20 were considerably more likely to complete less than 12 years of schooling than women who gave birth at age 20 or later. The percent of women completing less than 12 years of schooling was 68 percent for those under aged 15, 51 percent for those aged 15 to 17, and 34 percent for women aged 18 to 19 at first birth, compared to 19 percent of women aged 20 to 21, 10 percent of women aged 22 to 24 and 5 percent of women aged 25 to 29 at first birth.

Additionally, white and Hispanic women with age at first birth less than 20 were more likely to complete less than 12 years of schooling than black women. For instance, 55 percent of the white women and 76 percent of the Hispanic women aged 15 to 17 at first birth completed less than 12 years of schooling compared to 43 percent of the black women aged 15 to 17 at first birth.

TABLE 8.2 Percent of Mothers Aged 20-29 Having A Subsequent Birth Within 24 Months Of The First, By Their Age at First Birth, Race And Ethnicity*, 1982 National Survey of Family Growth

	Age at First Birth	% of Women 20-24 w/2nd Birth Within 24 Months of 1st (n)		% of Women 25-29 w/2nd Birth Within 24 Months of 1st (N)		% of Women 20-29 w/2nd Birth Within 24 Months of 1st (N)	
		Percent	Number of Women	Percent	Number of Women	Percent	Number of Women
Total	All Mothers	17	(653)	18	(1086)	18	(1739)
	Under 15	18	(24)	--	(18)	16	(42)
	15-17	18	(187)	20	(237)	19	(424)
	18-19	25	(203)	24	(264)	25	(467)
	20-21	14	(167)	17	(191)	15	(358)
	22-24	7	(71)	18	(241)	16	(312)
	25-29	n.a.	n.a.	11	(133)	11	(133)
White	Total	18	(262)	17	(502)	18	(764)
	Under 15	--	(2)	--	(0)	--	(2)
	15-17	16	(51)	17	(65)	16	(116)
	18-19	27	(78)	24	(92)	26	(170)
	20-21	15	(87)	18	(94)	16	(181)
	22-24	8	(44)	18	(160)	15	(204)
	25-29	n.a.	n.a.	10	(90)	10	(90)
Black	Total	17	(380)	21	(562)	19	(942)
	Under 15	20	(22)	--	(18)	16	(40)
	15-17	25	(134)	28	(170)	27	(304)
	18-19	17	(120)	24	(166)	20	(286)
	20-21	9	(77)	13	(95)	11	(172)
	22-24	4	(26)	19	(75)	15	(101)
	25-29	n.a.	n.a.	10	(37)	10	(37)
Hispanic	Total	11	(34)	20	(79)	16	(113)
	Under 15	--	(0)	--	(0)	--	(0)
	15-17	--	(9)	--	(14)	14	(23)
	18-19	--	(6)	--	(15)	34	(21)
	20-21	--	(15)	9	(23)	13	(38)
	22-24	--	(4)	14	(20)	11	(24)
	25-29	n.a.	n.a.	--	(7)	--	(7)

--Cell sizes were les than 20.

*Hispanic persons may be of any race, and whites and blacks may include Hispanic persons.

n.a. - not applicable.

Source: Special tabulations from the 1982 National Survey of Family Growth, conducted by the National Center for Health Statistics, DHHS.

TABLE 8.2

Table 8.2 shows the percent of women aged 20 to 29 having a subsequent birth within 24 months by their age at first birth. The data are from the 1982 National Survey of Family Growth (NSFG).

Among women aged 20 to 29, 19 percent of the blacks, 18 percent of the whites and 16 percent of the Hispanics had a second birth within 24 months of the first. The highest percent having a second birth among white and Hispanic women aged 20 to 29 were women who first gave birth at age 18 or 19, 25 and 34 percent respectively. Among black women however, women who first gave birth at ages 15 to 17 were the most likely to have a second birth within 24 months.

In general, women who first gave birth before age 20 were at least as likely, and in some cases more likely, than women aged 20 to 29 at first birth to have a second birth within 24 months of the first.

TABLE 8.3 Cumulative Percentage Of Metropolitan-Area Women Aged 15-19 Who Had A Premarital Second Pregnancy, By Number Of Months Following Outcome Of The Premarital First Pregnancy, According To Race, Outcome And Age At Conclusion Of First Pregnancy, 1971, 1976 And 1979

Months After 1st Outcome by Year	Total	Race		Outcome		Age	
		White	Black	Birth	Abortion	⩽16	17-19
1971	(N=214)	(N=36)	(N=178)	(N=173)	(N=41)	(N=110)	(N=104)
6	7.8	0.0	12.4	8.2	6.6	7.8	7.9
12	12.4	2.2	18.0	13.2	9.6	14.4	9.4
18	23.0	10.5	29.0	23.1	23.3	21.5	30.1
24	33.1	31.7	33.9	23.8	60.6	33.3	30.1
1976	(N=175)	(N=50)	(N=125)	(N=126)	(N=49)	(N=100)	(N=75)
6	7.5	8.4	6.3	6.7	8.4	4.2	10.7
12	19.9	17.1	21.9	23.4	13.0	20.7	17.5
18	27.2	17.1	34.4	33.4	15.0	26.2	28.5
24	36.0	26.2	42.8	36.0	39.3	31.7	44.4
1979	(N=290)	(N=110)	(N=180)	(N=169)	(N=121)	(N=181)	(N=109)
6	6.4	6.3	6.6	3.7	9.0	6.0	6.6
12	17.5	18.2	16.1	17.1	18.0	15.2	22.9
18	23.8	24.7	22.3	25.5	22.8	21.2	30.7
24	30.7	29.8	32.7	37.8	25.1	29.3	30.7

Source: M.A. Koenig and M. Zelnik. "Repeat Pregnancies Among Metropolitan Area Teenagers: 1971-1979," Family Planning Perspectives 14 (6) (November/December), Table 2, 1982. Reprinted by permission.

TABLE 8.3

Table 8.3 presents the cumulative percentage of metropolitan-area women aged 15 to 19 who reported a second premarital pregnancy, by the number of months following the outcome of the first premarital pregnancy, by race, outcome, and age at conclusion of first pregnancy. Data are from the 1971, 1976 and 1979 National Surveys of Young Women (NSFG) in which we recognize abortions are under-reported.

A higher cumulative percent of black teens reported a second premarital pregnancy within 24 months after the outcome of the first premarital pregnancy than white teens in 1971, 1976 and 1979. Among white teens 32 percent in 1971, 26 percent in 1976 and 30 percent in 1979 reported second pregnancies within 24 months while among the black teens 34 percent in 1971, 43 percent in 1976 and 33 percent in 1979 had second pregnancies within 24 months.

Among black teens, 34 percent in 1971, 43 percent in 1976 and 33 percent in 1979 had a second premarital pregnancies within two years of the outcome of the first premarital pregnancy.

Among women who reported a first premarital birth the cumulative percent having a second pregnancy within 24 months was 24 percent in 1971, 36 percent in 1976 and 38 percent in 1979. The cumulative percent of those reporting a first premarital abortion who became pregnant a second time within 24 months after the abortion was 25 percent in 1979, 39 percent in 1976 and 61 percent in 1971.

By 24 months after the resolution of a first premarital pregnancy, more women under age 16 than women aged 17 to 19 had a second pregnancy in 1971, 33 compared to 30 percent.

In contrast, in 1976 and 1979 more women aged 17 to 19 than age 16 or under had a second pregnancy: 44 and 32 percent in 1976, and 31 and 29 percent in 1979.

TABLE 8.4 Receipt Of AFDC Among Women Aged 20-29 By The Women's Age At First Birth, Race, And Ethnicity*, 1982 National Survey Of Family Growth

	Age at First Birth	Percent of Women 20-29 Receiving Any AFDC Income	
		Percent	Number of Women
Total	All Mothers	13	(1739)
	Under 15	45	(42)
	15-17	20	(424)
	18-19	21	(467)
	20-21	14	(358)
	22-24	3	(312)
	25-29	2	(133)
Women with no births		1	(1252)
White	All Mothers	9	(764)
	Under 15	--	(2)
	15-17	12	(116)
	18-19	17	(170)
	20-21	10	(181)
	22-24	2	(204)
	25-29	1	(90)
Women with no births		1	(820)
Black	All Mothers	33	(942)
	Under 15	53	(40)
	15-17	39	(304)
	18-19	31	(286)
	20-21	36	(172)
	22-24	15	(101)
	25-29	9	(37)
Women with no births		4	(404)
Hispanic	All Mothers	12	(113)
	Under 15	--	(0)
	15-17	9	(23)
	18-19	25	(21)
	20-21	18	(38)
	22-24	1	(24)
	25-29	--	(7)
Women with no births		3	(51)

--Cell sizes were less than 20.

*Hispanic persons may be of any race and whites and blacks may include Hispanic persons.

n.a. - not applicable.

Source: Special tabulations from the 1982 National Survey of Family Growth, Cycle III, conducted by the National Center for Health Statistics, DHHS.

TABLE 8.4

Table 8.4 shows the percentage distribution of mothers aged 20 to 29 receiving Aid for Dependent Children (AFDC) by age at first birth, race and ethnicity. Data are from the 1982 National Survey of Family Growth (NSFG).

Overall, 13 percent of all mothers aged 20 to 29 received AFDC; 9 percent of the white mothers, 12 percent of hispanic mothers and 33 percent of black mothers. Mothers who were under age 20 at first birth were more likely to be receiving AFDC than those over age 20 at first birth. Forty-five percent of the mothers who were under age 15, 20 percent who were aged 15 to 17, and 21 percent who were aged 18 to 19 at the birth of their first child, compared to 14 percent who were aged 20 to 21, 3 percent who were age 22 to 24 and 2 percent who were age 25 to 29 at the birth of their first child were receiving AFDC in 1982.

TABLE 8.5 Poverty* Status Of Women Aged 20-29, By Their Age At First Birth, Race, and Ethnicity**, 1982 National Survey of Family Growth

	Age at First Birth	Percent of Women 20-29 Receiving Any AFDC Income	
		Percent	Number of Women
Total	Total Mothers	36	(1739)
	Under 15	78	(42)
	15-17	50	(424)
	18-19	51	(467)
	20-21	37	(358)
	22-24	20	(312)
	25-29	9	(133)
Women with no births		23	(1252)
White	Total Mothers	32	(764)
	Under 15	--	(2)
	15-17	45	(116)
	18-19	47	(170)
	20-21	34	(181)
	22-24	19	(204)
	25-29	7	(90)
Women with no births		21	(820)
Black	Total Mothers	57	(942)
	Under 15	76	(40)
	15-17	63	(304)
	18-19	62	(286)
	20-21	56	(172)
	22-24	30	(101)
	25-29	16	(37)
Women with no births		34	(404)
Hispanic	Total Mothers	48	(113)
	Under 15	--	(0)
	15-17	60	(23)
	18-19	58	(21)
	20-21	42	(38)
	22-24	42	(24)
	25-29	--	(7)
Women with no births		27	(51)

--Cell sizes were less than 20.

*The definition of poverty is the woman's family income divided by the Census Bureau's poverty threshold, specific for family size.
**Hispanic Persons may be of any race and whites and blacks may include Hispanic Persons.

n.a. - not applicable.

Source: Special tabulations from the 1982 National Survey of Family Growth, Cycle III, conducted by the National Center for Health Statistics, DHHS.

TABLE 8.5

Table 8.5 shows the percent of mothers aged 20 to 29 whose incomes were 150 percent less than the poverty level by age at birth of first child, race and ethnicity. These data are from the 1982 National Survey of Family Growth.

Of all mothers aged 20 to 29, 36 percent had incomes below 150 percent of the poverty level; 32 percent of the white mothers, 48 percent of the Hispanic mothers and 57 percent of the black mothers. Of the women under age 15, aged 15 to 17 and aged 18 to 19 at first birth, 78, 50 and 51 percent respectively had incomes below 150 percent of the poverty level compared to 37, 20 and 9 percent of women aged 20 to 21, 22 to 24 and 25 to 29 at first birth.

Additionally, 23 percent of the women who had no births had incomes below 150 percent of the poverty level; 34 percent of black women, 27 percent of the hispanic women and 21 percent of the white women.

ADDENDUM

COMMONLY USED DATA SOURCES

This addendum contains descriptions of commonly used sources. These are listed below along with their acronyms.

NSFG	1. National Survey of Family Growth
NLS	2. National Longitudinal Surveys of Labor Market Experience of Youth; Young Women, Young Men, Mature Women and Mature Men
	3. National Vital Statistics
CPS	4. Current Population Surveys; and Fertility Supplements
	5. National Survey of Young Women (and Young Men); Kantner-Zelnick Data.
AGI	6. Alan Guttmacher Institute
NCHS	7. National Center for Health Statistics--collects the vital statistics on births
CDC	8. Center for Disease Control

TITLE — The National Survey of Family Growth (NSFG)

PURPOSE — The National Survey of Family Growth is a primary source of data on U.S. fertility patterns, infertility, reproductive health, contraception, and fertility intentions. In addition, the Survey obtains information relevant to child development on such topics as unwanted childbearing, adoption, adolescent pregnancy and unwed motherhood, prenatal care, post-natal care, and infant health. These topics may be examined in relation to information obtained on a variety of social, economic, and family characteristics. In addition, because the NSFG represents the continuation of a line of fertility surveys extending back to 1955, it is possible to use the data to continue a set of time-series statistics on family building, contraceptive use, and reproductive health that has covered a period of dramatic change in U.S. family patterns. Data from these surveys have also been used for several studies of changes in family composition. Data are used by health care providers and researchers, demographers and other social scientists, and by policy makers at both the federal and local level.

SPONSORSHIP — The survey is sponsored by the National Center for Health Statistics, Division of Vital Statistics, Family Growth Survey Branch. Funding has been provided by the Office of Family Planning Services in the (then) Bureau of Community Health Services, the Center for Population Research, NICHD, the Office of Adolescent Programs, as well as NCHS.

DESIGN — Women aged 15 to 44 of all marital statuses are interviewed in the nationally representative NSFG. The area probability sample of approximately 8,000 women in 1982 included an over-sample of 1,900 teenagers. Parental consent is obtained for all minors who are interviewed. Separate questionnaires are designed for women under age 25 and 25 and older. The 1982 interview--Cycle III of the NSFG--was the first to include all women in the childbearing years regardless of their marital status. Blacks were over-sampled to enable separate analyses of blacks.

A change in fieldwork is planned for the 1986 Survey. To reduce costs, the sample will be selected on the

basis of screening questions included in the large and nationally representative Health Interview Survey.

PERIODICITY

The NSFG provides data that continue a statistical time-series on American fertility patterns that was initiated during the early years of the "baby boom". The Growth of American Families surveys took place in 1955 and 1960 and were continued by the National Fertility Studies of 1965 and 1970. Cycles I, II, and III of the NSFG were fielded in 1973, 1976, and 1982 respectively. Cycle IV is scheduled for 1987.

CONTENT

Detailed data are collected on fertility events, on infertility and contraceptive use, on childbearing plans, adoption, and sex education, on reproductive and infant health, pre-natal and post-natal care, and family composition. Considerable background information is also collected on the women and their families.

LIMITATIONS

Since the focus of the Survey is on fertility the range of information on females under 15 and males 15-19 is limited. Under-reporting of abortion occurs in this, as in other household surveys. Since this is a survey of women, children living only with fathers are not represented.

Surveys prior to 1982 do not include teens who were not married or their mothers. This restricts trend analyses that can be done.

AVAILABILITY

Public use data tapes are available for the entire series of national surveys from the National Technical Information Service.

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TITLE — National Longitudinal Survey of the Labor Market Experience of Youth

PURPOSE — In 1977, it was decided to both continue the existing panels of the National Longitudinal Survey and to expand data collection by initiating a new National Longitudinal Survey of Youth. Data from the new survey would replicate much of the information obtained on young people in the earlier cohorts and would thus support studies of changes in the labor market experience of youth. In addition, the new data on youth would permit evaluation of the expanded employment and training programs for youth established by the 1977 amendments to the Comprehensive Employment and Training Act (CETA). The supplementary sample of 1,300 persons serving in the Armed Forces permit a study of the recruitment and service experiences of youth in the military. The richness of the data has also attracted researchers studying fertility issues, educational progress, marriage and divorce, income family structure.

SPONSORSHIP — The Department of Labor initiated the National Longitudinal Surveys and has provided much of the funding over the years. However, other agencies including the National Institute of Child Health and Human Development, the National Institute on Drug Abuse, the National Institute on Alcohol and Alcohol Abuse, and the Department of Defense have sponsored portions of the survey. Data are collected by the National Opinion Research Center.

DESIGN — The Youth sample is comprised of a nationally-representative probability sample of 5,700 young women and an equal number of young men 14-21, as of January 1, 1979, augmented by a sample of 1,300 young persons serving in the Armed Forces. Blacks, hispanics, and disadvantaged whites were all over-sampled to facilitate analysis of youth in these population groups. Individuals were considered to be in the population if they resided within the 50 states and were not institutionalized, or if they were on active military duty outside the United States. Non-military respondents were selected using a multistage, stratified area probability sample of dwelling units and group quarter units. A screening interview was administered at approximately 75,000 dwellings and group quarters in 202 primary sampling unites. Military

respondents were sampled from rosters provided by the Department of Defense. A total of 12,686 persons were interviewed. As of the completion of the fifth (1984) interview wave, 96 percent of those interviewed in 1979 were still being interviewed.

PERIODICITY — Interviews have been conducted annually since 1979. Interviews are currently planned to continue at least through 1985.

CONTENT — The National Longitudinal Surveys were designed primarily to analyze sources of variation in the labor market behavior and experience of Americans. Consequently, the content of the surveys is weighted toward labor force training and experience. However a great deal of information is also collected regarding formal education, marriage and fertility events, income and assets, family background, attitudes, aspirations, and expectations. Questions on drug and alcohol use are included, as well, along with information on family planning, child care, and maternal and child health care.

LIMITATIONS — There is under reporting of abortion, pregnancies and births.

AVAILABILITY — Public use tapes and tape documentation as well as a list of publications are available from the Center for Human Resource Research, 5701 North High Street, Worthington, Ohio 43085.

Contact: Frank Mott with questions regarding data on fertility and maternal and child health (612) 422-7337. Information is also available from Pat Rhoton or Dennis Grey or Ken Wolpin, Principal Investigator for the NLS, (614) 422-7337

TITLE — National Longitudinal Surveys of the Labor Market Experience of: Young Women, Young Men, Mature Women, and Mature Men

PURPOSE — This series of longitudinal surveys was initiated to explore the labor market experiences over time of several unique cohorts facing employment problems of particular concern to policy makers. The school-to-work transition, initial occupational choice, adaptation to the work of work, the work-family interface and attainment of stable employment are issues of concern for the cohorts of young men, aged 14-24 in 1966 and young women, aged 14-24 in 1968. For middle aged men, aged 45-59 in 1966, issues of declining health, unemployment, the obsolescence of skills, and age discrimination are of concern. Among women 30-44 in 1967, the key issue initially was labor force re-entry for women as their children became older. Subsequently, issues associated with women's retirement became important. Following these cohorts over time enables analysts both to describe the situations of different population groups and to understand the factors that are antecedents and consequences of situations ranging from education and employment, to marriage and family, to economic status.

SPONSORSHIP — These four longitudinal surveys were initiated by the Office of Manpower Policy Evaluation, and Research of the Department of Labor. The Center for Human Research of Ohio State University has developed the questionnaires and makes computer tapes and a wide range of documentation available. Field work is conducted by the U.S. Bureau of the Census.

DESIGN — Each of the four age-sex cohorts is represented by a multi-stage probability sample. To provide samples of blacks that would produce statistically reliable statistics, households in enumeration districts that were primarily black were sampled at a rate between three and four times that of other households. From over 35,000 inhabited housing units, a sample of 5050 men 45-59 was interviewed. A sample of 5225 males 14-24, excluding males on active military service was interviewed. Five thousand eight-three women, 30-44, and 5,159 young women 14-24 were also interviewed. The total number of households represented in the four NLS samples is 13,582; thus the sample includes a number of

families that have contributed more than one respondent. Initially, most interviews were conducted in person; however the majority of the interviews conducted in person; however the majority of the interviews conducted during the 1970s were done on the telephone. Data have been weighted to adjust for over-sam- pling and for sample attrition; when weighted, the data are nationally representative. As of the 15-year interview points, approximately 56 percent of the males originally 45-59, 65 percent of the younger men, and about 70 percent of the two women's cohorts interviewed initially were still being interviewed.

PERIODICITY

Young women were interviewed annually between 1968 and 1973, in 1975, 1977, 1978, 1980, 1982, 1983 and 1985. Further interviews are planned for 1987 and 1988.

Women were interviewed annually between 1967-69, in 1971-1972, 1974, 1976, 1977, 1979, 1981, 1982, and 1984. Interviews are tentatively planned for 1986 and 1987.

Young men were interviewed annually between 1966 and 1971, in 1975, 1976, 1978, 1980, and 1983. Further interviews have been cancelled.

Men were interviewed annually between 1966 and 1969, in 1971, 1973, 1975, 1976, 1978, 1980, 1981, and 1983. Further interviews have been cancelled.

CONTENT

In keeping with the primary orientation of the surveys toward labor force issues, numerous questions focus on employment experience, unemployment, income, and training. However, quite a bit of information was collected about the family background and the social and economic status of the family as well. None of the respondents were still children after the mid-1970s; however, a majority of the young women and young men had become parents by the 1980s, and some limited information is available about their children. Considerable information, shown below, was collected on the family situation of the young men and young women respondents when they were growing up.

AVAILABILITY Data tapes and complete documentation as well as a publications list are available from the Center for Human Resource Research, 5701 North High Street, Worthington, Ohio 43085.

Contact: Pat Rhoton or the respective cohort coordinators:
Mature men - Gilbert Nestel
Mature women - Lois Shaw
Young men - Stephen Hills
Young women - Frank Mott, or Principal Investigator for the NLS - Ken Wolpin (514) 888-8238 or (614) 422-7337

TITLE	Vital Statistics of the United States--Natality
PURPOSE	The purpose of the natality reporting system is to collect and tabulate at the federal level data on births from the 50 states and the District of Columbia. Demographic and health information can be analyzed by researchers and policymakers interested in assessing the health of infants and pinpointing health problems, making population projections and estimates, and measuring progress made by national health programs. In addition, the birth certificate provides legal proof of the birth.
SPONSORSHIP	The National Center for Health Statistics, vital Statistics Division, collects and publishes natality data.
DESIGN	Data are collected at the local level and forwarded to the state level. States report the data to the Division of Vital Statistics. A certificate for all live births and for stillbirths is completed by the attending physician or other health personnel. One hundred percent of the births are reported to NCHS in 42 states and 50 percent are reported in the remaining areas.
PERIODICITY	Data collection is continuous. Monthly and annual reports are issued.
CONTENT	The certificate of live birth, which is the source of vital registration data, contains a limited number of items. The mother's marital status is reported for only 41 states and D.C.; as of 1980 it is inferred for 9 states by comparing parent and child surnames. Parent educations is reported for 47 states and D.C.
LIMITATIONS	Not all states obtain all information and the range of data is limited (see above).

AVAILABILITY Data tapes may be purchased from the National Technical Information Service (703) 487-4780.

Contact: Stephanie Ventura, Selma Taffel or Bob Heuser, Chief (301) 436-8954, Natality Branch, Division of Vital Statistics, National Center for Health Statistics, 3700 East-West Highway, Hyattsville, Maryland 20792

TITLE Current Population Survey

PURPOSE The primary purpose of The Current Population Survey is to provide monthly measures of the characteristics of the labor force, labor force participation, employment, and unemployment in the United States as well as individual states and regions. In addition the survey serves as a vehicle for a series of supplements, conducted with varying degrees of regularity. Recent supplements have included job tenure and occupational mobility (January), demographic and income supplement (March), alimony and child support (April), multiple job holding (May), fertility (June), immunization (September), school enrollment (October), and voting and registration (November). These supplements are not necessarily conducted each year. For example, the voting and registration supplements are conducted only in elections years.

SPONSORSHIP The core survey is funded by the U.S. Department of Labor, which is responsible for its content. The Supplements are funded by a variety of sponsors, such as the National Institute of Child Health and Human Development (some of the fertility and childcare supplements) and the National Center for Education Statistics (the education supplements). The data are collected by the U.S. Bureau of the Census.

DESIGN The survey is designed to be representative of all persons age 14 or over living in households in the United States. More specifically it covers the civilian non-institutional population plus armed forces personnel living off-base or living on base with their families. A multi-stage probability sampling method is used involving first the selection of geographically defined primary sampling units (629 in 1982), next (through sub-stages) the selection of households within sampling units (63,000 households in 1982), and finally the identification of all persons 14 and over in sample households. In 1983, interviews, conducted in person, were obtained in 60,000 of the 63,000 households selected. The sample is designed to cover each of the 50 states and the District of Columbia.

The sample is slowly changed through the use of rotation groups. Any given rotation group is in the sample for

4 months, leaves the sample for 8 months, and returns for a final 4 months. In any given month the sample is composed of households from 8 different rotation groups.

PERIODICITY

The survey was begun in 1940 and has been conducted monthly since then. For the purpose of measuring employment, that week which contains the 12th of the month is used as a reference week.

CONTENT

In addition to data on employment, unemployment, personal income, and work-related activities, the core survey collects data on family income, housing tenure, household composition, age, sex, education, race/origin, and marital status.

AVAILABILITY

A rich array of published tabulations are available in The Current Population Reports, especially Series P-20 (population characteristics), Series P-23 (special studies), Series P-25 (population estimates and projections) and P-60 (consumer income).

Machine-readable micro data files are available from the Bureau of the Census for most months (for information about the availability of data for a particular month, inquiry may be made at Customer Services). Each file contains the data for a particular month. The first year for which files are available is 1968. Files for March are typically available 3-4 months after the survey date. The delay for other months may be longer.

Contact: Greg Weiland 301/763-2773
Data Users Services Division: Customer Services 301/763-4100

TITLE Current Population Survey-Fertility Supplements

PURPOSE The fertility supplements are designed to provide national estimates of women's fertility and expectations for future births. In addition some supplements (1977, 1982) have provided information about the child care arrangements used by working mothers for their youngest child under age 5.

SPONSORSHIP The fertility and birth expectations portions of the supplement are entirely a project of the U.S. Bureau of the Census. The child care portions of the 1977 supplement was sponsored by the Department of Health and Human Services and an expanded fertility supplement in 1980 was jointly sponsored by the Bureau and the National Institute of Child Health and Human Development.

DESIGN A description of the basic design of the Current Population Survey was provided in the write-up of the core survey. The supplemental questions have been asked of all persons in sampled households meeting certain eligibility requirements. Most recently these criteria are being an never-married female age 15-59 or a never married female age 18-59. Birth expectation questions are asked of women 18-44. However, these age criteria have varied from as low as age 14 to as high as age 75. In the expanded fertility supplement marital history data were gathered on men age 15-75 as well as women.

PERIODICITY The supplement has been conducted each June since 1971. A supplement is planned for 1984.

CONTENT Each supplement collects data on fertility and birth expectations. In addition the 1971, 1975, and 1980 supplements provide data on marriages and child spacing; and the 1977 and 1982 supplements, on child care. The 1980 supplement for the first time collected data on the marriage histories of men as well as of women, and included questions about men's children under 18 from previous marriages and whether any of these children live elsewhere.

LIMITATIONS

The usual supplement is quite brief, only providing data on total number of births, the birthdate of the youngest (sometimes also the oldest) child, and the number of additional children expected. The child care sections in 1977 and 1982 cover only child care arrangements of working mothers with children under 5, and for only the youngest of these children. Data are gathered on the kind of payment (cash or non-cash) but not the amount. The exclusion of unmarried women under 18 from any of the supplements means that no data on out-of-wedlock births to younger teenagers are available from this source.

Analyses of data from the marriage histories have shown that such retrospective histories are subject to considerable error, especially with regard to events several years in the past. The survey's practice of obtaining information from proxy respondents undoubtedly compounds this effect. Since most respondents are women, the data for men are most seriously affected.

Comparisons with other sources of data also show that the reports of men's children from previous marriages living elsewhere are too low.

AVAILABILITY

Refer to the description of the core survey. Machine-readable micro-data files are available for June from 1973. The latest tape currently available containing data from the June supplement is for 1982.

TITLE — The National Surveys of Young Women and Men (Kantner-Zelnik data)

PURPOSE — The Kantner-Zelnik studies have been a primary source of data on sexual experience of U.S. females between the ages of 15 and 19 during the 1970's and males age 17 to 21 in 1979. In addition, the three surveys (1971, 1976, and 1979) collected information on contraceptive use, pregnancies, pregnancy intention, and sex education experience.

SPONSORSHIP — John I. Kantner and Melvin Zelnik have been the principal investigators of these surveys. Funding has been provided by the Center for Population Research, NICHD, the Ford Foundation, and General Services Foundation.

DESIGN — The designs have differed slightly for the three interviews. The 1971 survey interviewed 15-19 year old women living in households in the continental United States, N=4611, and by means of a separate sample, young women living in college dormitories, total N=4611, and by means of a separate sample, young women living in college dormitories, total N=219. The 1976 survey sampled 2500 women born between March 1956 and February 1961 (age 15-19) living in households in the continental United States. The 1979 survey included both young women and young men living in households in Standard Metropolitan Statistical Areas (SMSAs) in the continental United States. Eligible female respondents were born between March 1959 and February 1964 (ages 15-19), total N=1,717, and eligible men between March 1957 and February 1962, total N=917.

PERIODICITY — Interviews have been conducted in three different years: 1971, 1976 and 1979. There have been different respondents in each cohort.

CONTENT — Detailed data are collected on sexual activity, contraceptive use, pregnancy, pregnancy intention, and sex education experience. Some background information was also collected.

LIMITATIONS — Under-reporting of abortions, pregnancies and births.

TITLE	Alan Guttmacher Institute (AGI)
PURPOSE	The Alan Guttmacher Institute is a primary source of data on U.S. abortion services. The AGI has surveyed all identified abortion providers in each state each year since 1973.
SPONSORSHIP	The Alan Guttmacher Institute, which receives support from a variety of private foundations.
DESIGN	All identified abortion providers in each state are surveyed.
PERIODICITY	The survey has covered each year from 1973-1982.
CONTENT	Data on age, race, marital status, education, number of children, gestation at abortion, number of previous abortions, and method of abortion are obtained from the Centers for Disease Control and combined with AGI data on the total number of abortions to generate national estimates.