Parental family characteristics and behavioral risk factors for sexually transmitted diseases in males

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Parental family characteristics and behavioral risk factors for
sexually transmitted diseases in males

by

Rosalie Jane Bakken

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Human Development and Family Studies
Major Professor: Mary Winter

Iowa State University
Ames, Iowa
2000
This is to certify that the Doctoral dissertation of

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For the Graduate College
DEDICATED TO SEVEN AMAZING PEOPLE

My Major Professor,
Mary Winter
Thank you for everything you have taught me, for your invaluable expertise, advice, generosity, thoughtfulness, sense of humor, and mostly, for your unwavering enthusiasm and belief in my abilities. I credit Dahlia Stockdale for her insight in sending me to you. Mary, you will always have my deepest respect, admiration, appreciation, and friendship. You are a truly remarkable person.

My Parents,
LaRita Trouten Bakken and William Wayne Bakken
Thank you for always being willing to listen, and for all your love, understanding, and support, especially over these past four years. Thanks for being there to help me celebrate the good times and get through the bad times, offering everything from moral support to heavy labor to proofreading. Thanks for always welcoming me home. Here’s to us taking a vacation without any of my statistics books in the backseat (or on the roof!)

Corly Petersen Brooke
Corly, you have influenced my life in so many ways. You are an inspiring role model, a trusted friend, and a gifted professor. You have given me incredible opportunities to broaden my knowledge and experience, and in the process, I have had the great fortune of knowing and learning from you. Thank you for your strong and enduring support.

Mack C. Shelley
Thank you for availing me so generously of your statistical expertise during the past four years. You always made time for me when I needed your help, even when it meant meeting on a Friday evening. Your continuing support is invaluable.

Earl W. Morris
Thank you for your expert theoretical insight, and for serving a unique and vital role on my committee. You challenged me to think from new perspectives, and you provided encouragement and praise at critical moments.

Franz Helmuth Rinkleff
You have been a constant source of balance, encouragement, and friendship in my life over the past year and a half. You donated countless hours of computer expertise with patience, generosity, and dependability. You have seen me through both the mundane struggles and the deadline crises of this dissertation process. Thank you, France’!
# TABLE OF CONTENTS

**LIST OF FIGURES** vii

**LIST OF TABLES** viii

**ACKNOWLEDGEMENTS** ix

**ABSTRACT** x

**CHAPTER 1. INTRODUCTION AND REVIEW OF LITERATURE** 1

- Introduction 1
- Rationale 3
  - Multiple Partners 3
  - Early Onset of Sexual Activity 4
- Number of Sexual Partners 5
- Influences on Sexual Risk-Taking Behaviors 8
  - Family Structure 8
  - Race and Ethnicity 10
- Summary and Purpose of this Study 13

**CHAPTER 2. THEORETICAL ORIENTATION AND CONCEPTUAL MODEL** 15

- Family Development Theory 15
  - The Importance of the Family in Shaping Norms and Roles 15
  - The Influence of Family Structure on Sexual Behaviors 17
- Summary 22
- Conceptual Model 23

**CHAPTER 3. METHODS** 26

- Data 26
- Variables 28
  - Life Conditions of the Parental Family 28
  - Socioeconomic and Demographic Characteristics of the Individual 31
  - Race/Ethnicity 33
  - Behaviors that Increase STD Risk 34
- Empirical Model and Hypotheses 36
- Statistical Analyses 42
  - Correlational Analyses 42
  - Structural Equation Modeling 42

**CHAPTER 4. RESULTS** 47

- Correlational Findings 47
- Structural Equation Modeling Analyses 50
  - Testing the Model for European-Americans 50
LIST OF FIGURES

Figure 1. Conceptual Model 24
Figure 2. Empirical Model 37
Figure 3. Standardized path coefficients for empirical model where race=0 51
Figure 4. Standardized path coefficients for empirical model where race=1 56
Figure 5. Standardized path coefficients for first trimmed model where race=0 61
Figure 6. Standardized path coefficients for second trimmed model where race=0 63
Figure 7. Standardized path coefficients for trimmed model where race=1 65
LIST OF TABLES

Table 1. Means, standard deviations, and ranges for all exogenous and endogenous variables according to race 29

Table 2. Directions of hypothesized relationships among variables 40

Table 3. Zero-order correlation matrix, European-American sample 48

Table 4. Zero-order correlation matrix, African-American sample 49

Table 5. Standardized regression coefficients for conceptual model where race=0 52

Table 6. Standardized regression coefficients for conceptual model where race=1 57

Table 7. Structural model comparisons 62
ACKNOWLEDGEMENTS

Appreciation is gratefully expressed to Dr. Koray Tanfer, Principal Investigator, National Survey of Men, and Senior Research Scientist, Battelle Human Affairs Research Centers, Seattle, for granting permission to use this data. The research on which this manuscript is based was supported by grant no. HD-26288 from the National Institute of Child Health and Human Development. The opinions expressed in this manuscript do not necessarily represent the views or policies of Koray Tanfer, Battelle Memorial Institute, or the National Institute of Child Health and Human Development.
ABSTRACT

Data from the National Survey of Men were analyzed using structural equation modeling to assess relationships among socioeconomic characteristics, parental-family characteristics, and sexual risk-taking behaviors in adolescence and adulthood. The sample included 2,833 males between ages 19 and 41. Results indicate that, among both African-Americans and European-Americans, age at voluntary sexual initiation is a powerful predictor of the number of sexual partners in adulthood. Late sexual initiation predicts a low number of partners in adulthood. Other variables that predict the number of sexual partners in adulthood include respondent’s age, education, and marital status.

Relationships among respondent’s age, marital status, and number of partners differ by race, however. It was hypothesized that the likelihood of being married would increase with age and that being married would be predictive of a low number of lifetime sexual partners. Although these hypotheses were supported within the European-American sample, they were not supported within the African-American sample. In fact, among African-American men, a young age was predictive of being married. Further, married African-Americans reported higher numbers of sexual partners over the lifetime than did those who were not married.

Being reared in an intact family and having a mother who was not employed outside the home were predictive of delayed sexual initiation. The study also found that among both African-Americans and European-Americans, age of the respondent is a powerful predictor of the age at voluntary sexual initiation, supporting previous research indicating that the average age at sexual initiation is decreasing.
Results imply that there is great potential for reducing sexual risk in adult males by delaying the initiation of sexual activity. Conclusions underscore the critical need to reach youth with prevention and education programs before they become sexually active. Programs and policies specifically designed to address the needs of nontraditional families, and to engage youth in productive activities during nonschool hours are recommended.
CHAPTER 1. INTRODUCTION AND REVIEW OF LITERATURE

Introduction

Each year there are approximately twelve million new cases of sexually transmitted diseases (STDs) in the United States (American Social Health Association, 1998). The characteristics of some sexually transmitted diseases, such as being resistant to treatment, lacking a cure, and absence of symptoms, contribute to their spread. The past two decades have brought increasing concern over the rapid spread of STDs of viral origin (Centers for Disease Control and Prevention, 1998; Koyle, Jensen, Olsen, & Cundick, 1989). Unlike bacterial infections, viral STDs such as Hepatitis B, herpes, human papilloma virus (genital warts), and human immunodeficiency virus (HIV) cannot be cured, and, in the case of HIV, can lead to death from Acquired Immune Deficiency Syndrome (AIDS).

A great deal of medical and social science research has been done in an attempt to provide insight into the risk behaviors that lead to transmission of STDs and their prevention and treatment. Recent years have brought increasing recognition that sexuality-related behaviors in adolescence and adulthood are associated with a wide variety of variables, particularly characteristics of the family during an individual’s childhood and early adolescence (Althaus, 1997; Devine, Long, & Forehand, 1993; Dorius, Heaton, & Steffen, 1993; Forste & Heaton, 1988; Miller et al., 1997; Mott, Fondell, Hu, Kowaleske-Jones, & Meneghan, 1996; Newcomer & Udry, 1987; Pick & Palos, 1995; Taris & Semin, 1997; Thornton & Camburn, 1987; Whitbeck, Simons, & Kao, 1994). The purpose of this study is to contribute to the present body of knowledge
in this area by exploring selected characteristics of the family of origin and relating them
to age of onset of first sexual activity and to sexual risk-taking behaviors that occur later
in adulthood. The purpose will be accomplished through analysis of the National Survey
of Men using structural equation modeling.

This chapter is organized into four sections. The first section presents a brief
overview of the literature on two primary risk-taking behaviors that have been implicated
in the acquisition of STDs: having multiple sex partners and initiating sexual activity at
an early age. This section provides a rationale for focusing on these two particular
behaviors and for seeking an understanding of factors that may influence their occurrence.
The second section of the literature review includes an in-depth review of the study of
multiple partners, including a description of how this variable has been measured. It also
includes a summary of current findings related to number of sexual partners and
associations between number of partners and demographic characteristics. The third
section of the literature review is focused on research that has explored the factors that
influence sexual risk-taking. Two categories of factors are discussed: those that relate to
the structure of the parental family (the primary family in which an individual is raised),
and those that relate to race/ethnicity. The last section of the chapter provides a brief
summary of the literature review and describes the purpose of this study in terms of
expanding upon previous findings.
Rationale

Multiple Partners

Four frequently-cited risk factors for the transmission of STDs are number of sex partners, frequency of sexual activity, type of sexual contact (oral, vaginal, or anal), and sexual orientation (Billy, Tanfer, Grady, & Klepinger, 1993). The first of these is of primary importance because the other factors are not risky if they occur only within the context of a permanent, mutually-monogamous relationship. The number of sexual partners long has been recognized as a critical factor in the determination of relative exposure to STDs. An individual who has had any type of sexual contact (oral, anal, or vaginal intercourse) with more than one person is considered to have had “multiple partners” (Dolcini et al., 1993, p. 208), and to be at heightened risk of infection with an STD (Dolcini et al., 1993; Ericksen & Trocki, 1992; Hollander, 1993).

As the number of partners increases, so does the likelihood of interacting with an infected person by mere chance, because of the greater number of potential exposures. Each additional sex partner across the life span increases STD risk exponentially because there is potential exposure to any infectious organisms that the new partner has received from previous partners. In a sense, each sexually active individual is exposed to all the previous partners of his or her current partner. It has also been suggested that those who choose to engage in sex with multiple partners generally have a riskier pattern of partner recruitment, thereby heightening the likelihood of choosing an infected partner from among the pool of all potential sexual partners (Seidman, Mosher, & Aral, 1994).
Early Onset of Sexual Activity

Another factor that has been implicated as an important STD risk is early onset of sexual activity (Strong, DeVault, & Sayad, 1999). The age of an individual at onset of sexual activity is an important determinant of lifetime sexual risk for several reasons. Early onset of sexual activity is correlated with a high number of lifetime sexual partners (Seidman et al., 1994). A possible reason for this correlation is that there is a longer period of potential sexual activity during the individual's life span and therefore an increased opportunity to engage in risky sexual behaviors (Greenberg, Magder, & Aral, 1992; Miller et al., 1997; Thornton, 1990). Research has shown that early sexual activity is particularly problematic for young people in terms of STD risk for two biological reasons. First, cells that are not fully mature are more susceptible to infection, and second, the immune system of a younger person is likely to be less developed than that of someone older (Strong et al., 1999).

Consistent and proper use of condoms reduces STD risk for young people. Research has documented that large portions of sexually active adolescents fail to use contraception or STD protection, however, or do not use it effectively (Dorius et al., 1993). The level of condom use at first intercourse is only about 50% (Mauldon & Luker, 1996; Moore, Miller, Glei, & Morrison, 1995). Further, the average age of sexual initiation has decreased over the past 30 years by three to four years (Devine et al., 1993; Hofferth, Kahn, & Baldwin, 1987; Kiernan & Hobcroft, 1997; Moss, 1994; Warren et al., 1997). At this point, two-thirds of those infected with STDs are under the age of 25 (Strong et al., 1999). The objectives of the present study are to examine the relationships
among selected individual and parental family characteristics, age at sexual initiation
(first experience of coitus), and the number of lifetime sexual partners reported by adult
men.

**Number of Sexual Partners**

Extensive research has been conducted into various population subgroups to
ascertain the average number of sexual partners, particularly since the advent of the AIDS
epidemic. Recent research has yielded unclear results as to the proportion of individuals
who have multiple partners, because results have been difficult to compare across studies.
There are several reasons for this problem. First, many studies have used samples from
specific population sub-groups such as college-aged students (Binson, Dolcini, Pollack, &
Catania, 1993; Desiderato & Crawford, 1995; Santelli, Brener, Lowry, Bhatt, & Zabin,
1998; Simkins, 1995). Other studies have focused on particular racial or ethnic
subgroups such as European-Americans, African-Americans, or Latin-Americans, or on
individuals living in high-risk cities (Binson et al., 1993; Marin, Gomez, & Hearst, 1993;
Mott et al., 1996; Peterson, Catania, Dolcini, & Faigeles, 1993; Sabogal, Faigeles, &
Catania, 1993). Still others have used clinical samples (Clift, Wilkins, & Davidson,
1993), or sampled only females (Joffe et al., 1992; Kost & Forrest, 1992).

Second, the variable used to measure number of sexual partners is inconsistent
across studies. Some have used the number of lifetime sexual partners, whereas others
have asked for the number of partners in the past year or even in the three months or four
weeks preceding the survey. The result is that even those descriptive studies that use
large, nationally representative samples can be difficult to compare because they collect
data on number of partners using inconsistent time frames for measurement. Specifically, Leigh, Temple, and Trocki (1993) found that 13% of respondents had multiple (two or more) partners in the past year, and 31% had multiple partners in the past five years. Similarly, others have found 9% (Dolcini et al., 1993) and 13% (Hollander, 1993) of respondents reporting multiple partners in the past year. However, large studies conducted in high-risk geographic areas have found that 24% (Binson et al., 1993) and 37% (Dolcini, Coates, Catania, Kegeles, & Hauck, 1995) of respondents reported having had multiple partners in the past year. Studies using college-aged students show that even higher proportions of this population engage in sexual behaviors with multiple partners. Desiderato and Crawford (1995) found that one-third of sexually active college students had two or more partners in the 11 weeks prior to their survey. Other research indicates that 15% of sexually-experienced females and 35% of sexually-experienced males aged 12-21 had two or more partners in the three months before the survey (Santelli et al., 1998).

Previous studies have documented the correlations between gender, age, and marital status with the number of sex partners. Males consistently report higher numbers of partners than do females (Hollander, 1993; Marin et al., 1993; Messiah, Pelletin, & the ACSF Group, 1996; Sabogal et al., 1993; Santelli et al., 1998; Smith, 1991). It has been suggested that gender differences in numbers of partners may be, in part, a reflection of over-reporting by males and under-reporting by females, according to what the dominant culture traditionally has deemed appropriate behavior (Lauritsen & Swiecegood, 1997; Peterson et al., 1993; Rosenberg, Gurvey, Adler, Dunlop, & Ellen, 1999). Greater
numbers of partners are reported by younger respondents, particularly those in their 20s, than by older respondents (Hollander, 1993; Leigh et al., 1993; Marin et al., 1993; Peterson et al., 1993; Smith, 1991).

Not surprisingly, married respondents consistently report having fewer sexual partners than those who are not married (Binson et al., 1993; Hollander, 1993; Kost & Forrest, 1992; Leigh et al., 1993; Peterson et al., 1993; Smith, 1991; Somse, Chapko, & Hawkins, 1993). Information about the association of race and of education with numbers of partners has been less clear. In the majority of studies, African-Americans report having multiple partners more frequently than other races (Durbin et al., 1993; Hollander, 1993; Smith, 1991). Some studies, however, have found complex relationships related to race as it interacts with marital status or other variables (Dolcini et al., 1993; Dolcini et al., 1995; Kost & Forrest, 1992; Leigh et al., 1993). Finally, high levels of educational attainment are associated with high numbers of sexual partners over the lifetime.

A review of related literature reveals that, whereas many surveys have collected data on the risk factors for multiple partners, very few have focused on adult, heterosexual males. Although many studies have dealt with sexual risk-taking behaviors of adult homosexual men (Bochow et al., 1994; Kelly, Sikkema, & Winett, 1995; Remafedi, 1994; Siegel, Bauman, Christ, & Krown, 1988), there is a need for greater understanding of these behaviors among heterosexuals, particularly in light of recent trends indicating a significant increase in the rate of AIDS among heterosexuals (Crooks & Baur, 1999; Dolcini et al., 1993; Simkins, 1995). As noted, up to this point, the
majority of research in this area has used select groups or subpopulations, such as college students or clinical samples. A further limitation to understanding these behaviors is that studies that have used nationally representative samples frequently are strictly descriptive in nature (Billy et al., 1993; Hollander, 1993). Although the results of this study will not provide a remedy for the problem of comparing descriptive results across studies, it will provide a method for simultaneously incorporating into the model a variety of demographic characteristics such as respondent's age, education, race, and it uses a nationally representative sample. In addition, previous research efforts will be expanded in this study by focusing on males, a group that has the highest AIDS prevalence rate of all demographic groups (Billy et al., 1993). Use of structural equation modeling also will move this study beyond descriptive statistics to examine potential predictors of high-risk behaviors and patterns among the variables being studied.

Influences on Sexual Risk-Taking Behaviors

Family Structure

There have been numerous investigations into the methods by which the family of origin (or parental family) may influence an individual's sexual behavior. Most of these studies have related one or more characteristics of the parental family to the age at the onset of sexual activity (Dorius et al., 1993; Forste & Heaton, 1988; Kiernan & Hobcraft, 1997). A review of literature relating age of sexual initiation to characteristics of the family of origin reveals a well-documented relationship between family structure and age at first sexual activity. Individuals from intact families tend to postpone sexual initiation significantly longer than those who experience the divorce of their parents or, for other
reasons, grow up in a socially nonnormative family structure. Research shows that an absence of family stability is associated with early onset of sexual activity, and that living in an intact family (where no divorce or marital change among parents has occurred) is associated with postponement of sexual initiation among adolescents (Devine et al., 1993; Flewelling & Bauman, 1990; Hofferth et al., 1987; Kinnaird & Gerrard, 1986; Miller et al., 1997; Rosenbaum & Kandel, 1990). For instance, a recent study in Great Britain found that males from disrupted families were 50% more likely than those from intact families to have initiated sexual activity prior to the age of 17 (Althaus, 1997). This result is supported by other research showing links between growing up in a single-parent home and engaging in sexual activities early (Forste & Heaton, 1988; Kinsman, Romer, Furstenberg, & Schwarz, 1998). Average age at first sex is two years higher for young men who were raised in a two-parent household as compared to those whose parents were divorced (Kiernan & Hobcraft, 1997). Similarly, growing up in a two-parent family is negatively correlated with number of sexual partners during adolescence (Feldman & Brown, 1993).

Other recent research has focused specifically on father absence in particular as the salient family characteristic that influences age of sexual initiation among adolescents. Taris and Semin (1997) found that adolescents from father-absent households begin to engage in sexual intercourse at an earlier age than others. This finding is supported by Newcomer and Udry's (1987) study that found youth who began having sex before the age of 14 were more likely to be from a home lacking a father figure. Other studies show that youth who live with an adult who is not one of their
parents are significantly more likely than other youth to engage in sexual activity before the age of 13 (Coker et al., 1994). It has been found that, for boys, the process of transitioning from a "natural, two-parent household" to a household headed by a single mother brings a risk for early initiation of sexual activity (Newcomer & Udry, 1987, p. 238). These results hold true even when other important variables such as religion, age, and socioeconomic status are controlled (Coker et al., 1994; Flewelling & Bauman, 1990; Miller & Bingham, 1989; Miller & Moore, 1990).

**Race and Ethnicity**

Previous studies of sexual risk-taking behaviors have found that African-Americans are more likely to have multiple partners than other races (Durbin et al., 1993; Hollander, 1993; Smith, 1991). Studies also have found that African-American youth initiate sexual activity earlier than others (Coker et al., 1994; Hofferth et al., 1987; Kinsman, Romer, Frustenberg, & Schwartz, 1988; Ku, Sonenstein, & Pleck, 1993; Miller et al., 1997; Young et al., 1991; Zelnick, Kantner, & Ford, 1981; Zelnick & Shah, 1983). Reasons for the consistent association of race with sexual risk-taking behaviors are not entirely clear.

In analyzing the basis for racial differences in age at sexual initiation and number of lifetime sexual partners, it is helpful to identity factors that are directly connected with race, because those are the methods by which racial conditions can affect age of initiation and number of partners (see Davis & Blake, 1956). These factors include a variety of socioeconomic and cultural variables such as education, urbanization, income level,
social norms, values, and life goals, which can be seen as intermediate variables connecting race to sexual behavior.

Specifically, it has been suggested that financial uncertainty and poor educational and career prospects may result in the delay of marriage among economically constrained African-Americans (Hogan & Kitagawa, 1985). Youth in this situation may seek nontraditional methods by which to achieve adult status, such as through premarital parenthood, because traditional paths to achieving adult status including college, career, or marriage, are not realistically attainable. Characteristics of poor black neighborhoods have also been implicated in the association between race and sexual risk-taking behaviors among youth. Neighborhoods with a disproportionately high number of teenagers, but fewer black males eligible for marriage, and neighborhoods lacking supervised recreation areas for youth or quality school systems may lead to reduced marital and academic aspirations and inability of parents to provide adequate supervision (Hogan & Kitagawa, 1985). Further, these neighborhoods may increase exposure of youth to nonnormative behaviors and therefore may encourage nonnormative or defiant behaviors, such as engaging in sexual activities at an early age, by normalizing them (Hogan & Kitagawa, 1985). It should be noted that several studies of the age at the onset of voluntary sexual activity, however, have controlled for factors such as neighborhood and income level and still have found that race has a significant effect on age at sexual initiation and level of recent sexual activity (Forste & Heaton, 1988; Furstenberg, Morgan, Moore, & Peterson, 1987; Ku et al., 1993). This finding suggests that cultural
factors, apart from poverty status, may be salient in influencing sexual risk-taking behaviors.

Some of the effect of race on adolescent sexual behavior is explained by the documented differences in sexuality-related norms and values among African-Americans compared to those of other races. Smith and Udry (1985) found that African-American youth are less likely than others to engage in a "predictable series of noncoital behaviors for a period of time before having sexual intercourse." They found that African-Americans are more likely to report moving directly from necking to intercourse, whereas this transition is spread over a longer period of time for European-Americans. In other studies, African-Americans have reported being more tolerant of nonmarital sex and childbearing, and rated marriage as less important than those who are not African-American (Moore, Simms, & Betsey, 1986). Coker et al. (1994) report that black adolescent males place a particularly high value on early sexual activity. Again, these findings imply social and cultural differences that provide a link between race and early sexual risk-taking behaviors, particularly as mediated through economic conditions.

An in-depth exploration of a variety of races and ethnic subcultures would undoubtedly contribute greatly to the understanding of cultural influences on age at sexual initiation and other sexual risk-taking behaviors. Because the sample used in this study does not include large enough groups from among races or ethnicities other than European-Americans and African-Americans, the focus in this study is on ascertaining predictive patterns among the two largest racial groups in the data set: European-Americans and African-Americans.
Summary and Purpose of this Study

The research cited makes it clear that the experience of living in a household where family structure is disrupted by divorce or characterized by father absence is correlated with sexuality-related behaviors and risk-taking among adolescents. Although the cited studies appear to have established that there is a relationship between current family structure and sexual behaviors of adolescents, the previous studies have not specified the reasons for this relationship. Further, there is a need to examine the relationship between family structure during childhood and sexual risk-taking later in life. There is very little information presented in existing literature about the long-term effects on sexual risk-taking of experiencing family disruption or growing up with a nontraditional family structure.

Specifically, there is a dearth of research relating parental family characteristics and age of onset of sexual activity (or other adolescent sexual behaviors) to sexual risk-taking behaviors in adulthood. Devine et al. (1993) attempted to discover whether family variables during early adolescence could be used to predict various problem behaviors, including sexual risk-taking, six years later, during late adolescence and early adulthood. They found that females whose parents were divorced reported both an earlier age of sexual initiation and larger number of sexual partners than those living with both parents. It should be noted, however, that a very small, homogeneous sample of white respondents aged 21 or younger was used for this study. Researchers in a second relevant study related age of first sexual intercourse to current number of partners among adults (Greenberg et al., 1992). Although a large sample was used, it included only a select
group of women attending family planning clinics in Pennsylvania. Only one published study was found in which investigators examined factors present in early life as they relate to both the age of onset of sexual activity and to having multiple partners during adulthood (Seidman et al., 1994). Although only women were included in that study, a complex association was revealed between race and living arrangements at age 14 as they relate to number of partners in adulthood. There is a need for similar research using nationally representative samples and focusing on, or at least including, heterosexual men.

The current study was undertaken for the purpose of exploring and clarifying the relationships that exist among family structure during childhood and early adolescence, age at onset of sexual activity, and sexual risk-taking behaviors in adulthood. An important component of this study is the use of a large, nationally representative sample of heterosexual adult males. Another important component of the study is the inclusion of three variables that relate to the parental family: intact/nonintact family structure, employment status of the respondent's mother, and educational attainment of the respondent's mother. Studying the separate effects of each of these variables on sexual risk-taking provides an opportunity to clarify the nature of the previously-documented relationships between parental family structure and age at sexual initiation. The overall aim of the study is to contribute to the present level of knowledge regarding the long-term impact of family structure on sexual behaviors. As this impact becomes more clearly understood, social and medical scientists and educators may be better able to delineate a successful course of action leading to reduction in STD-related morbidity and mortality.
CHAPTER 2. THEORETICAL ORIENTATION AND CONCEPTUAL MODEL

This chapter has two sections. The first section begins with a discussion of the importance of the parental family in shaping children’s behavioral norms and roles. Next, a description is provided of the processes by which family structure may have an influence on the sexual risk-taking behaviors of youth, particularly when there is a change in family structure. A summary then is presented of how family development theory provides an explanation for the relationship between family structure and sexual risk-taking behaviors. In the second section of the chapter, a conceptual model illustrating the proposed relationships among individual and family characteristics and STD risk-taking behaviors is presented.

Family Development Theory

Family development theory offers a framework for exploring and understanding how family experiences during childhood influence an individual’s personality and development and continue to shape behavior through adolescence and adulthood. This theory was developed originally for use in the field of sociology in the 1940s by Hill and Duvall (Winton, 1995). An eclectic mix of concepts and ideas are incorporated into family development theory. This mixture allows for capitalization on positive aspects of earlier theories, which are synthesized to provide a unique and useful explanation of how families change over time.

The Importance of the Family in Shaping Norms and Roles

One of the primary concepts used in family development theory is “norms,” which refer to formal and informal social rules that dictate the behaviors that are required,
forbidden, or permitted for individuals at each position within a social system (White, 1991). All the norms for a particular position in society, when brought together, create the social role for the individual in that position. A basic tenet of family development theory is that families move through a cycle of qualitatively distinct stages, often marked by changes in family structure such as birth, divorce, death, or launching of children (Rodgers & White, 1993). There is a focus on the transition from one stage to the next and on how these transitions are precipitated and mediated by social, psychological, and physiological characteristics of individual family members, as well as by the larger social environment (Mattessich & Hill, 1987). These transitions frequently bring about changes in the norms and roles of individual family members as they strive to achieve their individual goals as well as those of the family unit, namely survival and successful adaptation to a multitude of recurring life stresses (Mattessich & Hill, 1987).

An important component of the family is the differences in the personalities of its members, because these personalities are both shaped by the family and also have an effect upon the family. It is important to consider how the experiences and characteristics of individual family members are determined by the family as a whole. In 1948, Hill and Duvall (cited in Mattessich & Hill, 1987) presented the idea that the family provides an organization and setting for “facilitating the growth and development of its members” (p. 438). It provides the primary environment in which children learn about societal norms. Parents typically are responsible for socializing children to adopt certain roles, both within and outside of the family. Families accomplish this task by establishing a certain internal culture that is influenced both by individual members as well as the larger
society. Individual family members then respond or react to the environment that is thus created (Mattessich & Hill, 1987). When the structure of a family changes, as when a divorce occurs, the internal culture of the family may be affected, and children therefore may need to respond to this altered environment.

**The Influence of Family Structure on Sexual Behaviors**

One of the fundamental assumptions of family development theory is that the family unit is resilient. In fact, one of the primary features of the family is its ability to adapt to changes that are brought about by behaviors or feelings of family members or by events that occur outside the family unit in the larger societal context (Mattessich & Hill, 1987). This ability of families to deal with changes manifests itself in several ways. In response to a threat of some sort of disruption, the family initially may attempt to make minor adjustments to maintain the state of balance or equilibrium within the family and to allow the family to continue working toward its goals. For instance, a couple experiencing marital difficulties may adjust their schedules to spend more time together or increase their efforts to communicate effectively in an effort to improve the situation. If these measures are not successful, the couple may have to make greater efforts requiring a major reordering of behaviors (Mattessich & Hill, 1987), such as seeking outside counseling, finding or quitting a job, moving the family, or seeking chemical dependency treatment. In the most drastic scenario, the family may have to adjust goals entirely and create new ideas of what are acceptable roles and behaviors within that family system, as when a divorce occurs.
The occurrence of a divorce marks a major transition within a family. The institutional norms that society creates for divorced individuals and their families differ from those held for others (White, 1991). Therefore, divorce may bring concomitant changes in roles for all family members. One specific change that occurs with a divorce is a need for financial resources to support two separate households, particularly when children are involved. This increased financial need may require one or both parents to work additional hours outside the home. When this change occurs, children receive less parental supervision as a consequence (Devine et al., 1993; Newcomer & Udry, 1987; Taris & Semin, 1997). The decrease in supervision results both from the reduction in the number of parents in the household and from the increased likelihood that the custodial parent works fulltime (Miller & Moore, 1990).

The change in family structure and the attendant decrease in parental supervision means children’s roles within the household also are likely to be affected. Adolescents are likely to experience an increased level of independence and an expectation that they take on new responsibilities within the home to aid the custodial parent in maintenance of the household. For example, children may be given additional freedoms to make major decisions on their own (possibly before they are capable of comprehending all of the ramifications), or they may be expected to take on additional household responsibilities, which may provide them with an inappropriately-excessive level of independence in daily living. In this manner, an adolescent may be encouraged to make an early transition into an “adult” role when there is disruption of the parental family due to divorce, or in the context of a nonmarital family. The combination of being allowed or encouraged to take
on a higher level of responsibility and independence, and, at the same time, the decreased level of parental supervision, may lead toward initiation of sexual activity in adolescents, particularly since this stage of individual development is marked by surging hormones, physical maturation, and an "increased cultural emphasis on sex and rehearsal for adult gender roles" (Hyde & DeLamater, 1997, p. 284).

The tendency toward early initiation of sexual activity among adolescents from nonintact families may be affected by several other family characteristics that are influenced by societal norms. For instance, recent decades have brought a change in norms related to a woman's employment status while she is fulfilling a child-rearing role. It has become the norm for mothers to work outside the home rather than devoting themselves to full-time motherhood. As women's roles change, the norms for children across a multitude of behavioral realms may be affected. Within the context of this study, it is expected that respondents whose mothers were employed outside the home are likely to report a predictable pattern of sexual risk-taking behaviors because of changes in norms and roles within those families. It is expected that, if the respondent's mother was not employed outside the home during his childhood, the level of maternal supervision and communication with the respondent during childhood would have been enhanced, reducing the incidence of precocious sexual activity in that group. This suggestion is supported by previous research indicating that boys whose mothers spend many hours at work while they are growing up are likely to begin having sex early (Hansson, O'Conner, Jones, & Blocker, 1981; Ku, Sonenstein, & Pleck, 1993; Mott et al., 1996).
Another important factor within the family is parental education. It is expected that respondents whose parents have higher levels of education are less likely to engage in early sexual activity than others. The nature of this expectation is twofold. First, parents with higher levels of education may be more likely to recognize the importance of talking with their children about the risks of early sexual involvement. They may be better equipped, in terms of knowledge and communication skills, to affect their children's decision-making abilities positively. This expectation is supported by previous research indicating that children whose parents are highly educated are more likely to postpone initiation of sexual intercourse than others (Forste & Heaton, 1988; Ku et. al., 1993; Miller et al., 1997; Miller & Sneesby, 1988; Rosenbaum & Kandel, 1990; Thornton & Camburn, 1987).

Further, because parents serve as role models to their children, the highly educated parent conveys to a child the importance of pursuing an education. Because high levels of educational attainment are correlated with higher socioeconomic status, highly educated mothers are less likely to be lacking resources to send children to college or vocational school, so college is indeed a realistic and valued goal for these youth. In this way, the child is encouraged to develop life goals that are inconsistent with sexual risk-taking behaviors.

Teen parenthood, for instance, makes it much more difficult to graduate from high school and pursue a college degree because of financial and other constraints associated with teen parenthood. Children who aspire to attend college would presumably want to avoid any situation that would compromise their chances of success in this goal.
Therefore, youth with these aspirations are more likely to postpone sexual involvement in favor of pursuing other goals. This explanation is supported by research showing that adolescents who postponed premarital intercourse had higher socioeconomic status, had received more sex education from their parents, had greater knowledge about sexuality, had discussed sexuality with their mothers, and had higher aspirations than those who began having sex before age 16 (Pick & Palos, 1995; Rosen, Herskovitz, & Stack, 1982).

Another method by which the structural change to a single-parent family (from a two-parent family) may lead to earlier sexual involvement among adolescents is through changes in sexuality-related attitudes that are conveyed subtly by parents. Divorce is associated with a switch toward more permissive attitudes among parents regarding sexual behavior (Thornton & Camburn, 1987). This change in norms among divorced parents is often communicated to children inadvertently as single parents begin dating again and, for some, become sexually active outside of a marital situation (Kieman & Hobcraft, 1997). Many parents remarry, which also demonstrates a certain level of acceptance of having more than one lifetime sexual partner. Transmission of sexuality-related values and attitudes that condone having more than one lifetime partner and engaging in nonmarital sex therefore may result in a different set of values and role expectations in children and adolescents of single or divorced parents (Devine et al., 1993; Young, Jensen, Olson, & Cundick, 1991).

Moreover, in single parent homes, the parent and adolescent may be entering into dating relationships concurrently, and both may be encountering similar developmental tasks related to the formation of positive romantic relationships. Yet, the "life stages and
"norms" for these two types of relationships (adolescent courtship and adult courtship) are very different (Whitbeck, Simons, & Kao, 1994, p. 618). Adolescents, however, may not recognize these differences and may model their own dating behavior after that of their single parent, which is not always age-appropriate for the adolescent. An accompanying reduction in a single parent's ability to monitor behavior of children and adolescents closely may bring the likelihood of precocious sexual activity among youth.

Because the family is the primary source of norms and role models, behaviors learned within the family environment are likely to provide the foundation for subsequent attitudes and behaviors, beyond childhood into adolescence and adulthood. People tend to follow the values and standards instilled while they were growing up (Aldous, 1996). Therefore, children who grow up in an environment where lifetime monogamy is not a role expectation may be more likely to engage in sexual intercourse with multiple partners across the life span.

**Summary**

The previous discussion put forth several methods by which characteristics of the parental family and, in particular, the experience of growing up in a nonintact family, may create new norms and roles within families and thereby be influential in determining a child's age at initiation of voluntary sexual activity. Five methods have been specifically suggested. First, a low level of parental supervision over children and adolescents provides the opportunity for their engagement in precocious sexual activity. Second, parents who have acquired a high level of education themselves will portray to their children the value of educational goals and, as role models, will influence their children
positively to pursue the same types of educational goals. Children who aspire to attend college or pursue careers outside the home will have a particular motivation to avoid activities (such as engaging risky sexual behavior) that may jeopardize these plans. The level of educational attainment of parents is involved in this association. As discussed, high educational level of parents also may increase parent-child communication regarding the risks of early sexual involvement, which also would serve to decrease early sexual activity.

Fourth, by giving a child adult freedoms and responsibilities in some realms, single parents may inadvertently convey that they believe the child is capable of taking an adult role in all realms of behavior including sexuality, which may encourage premature sexual activity among adolescents from nonintact families. Finally, a fifth method by which nonintact family structure can affect age at sexual initiation is through parents conveying an accepting attitude of nonmarital sexual activity or of having multiple sexual partners across the life span. These values are transmitted to children, who may interpret that premarital sexual activity is being condoned.

**Conceptual Model**

Drawing upon family development theory and incorporating the findings of previous research related to sexual risk-taking behaviors, a model is proposed that depicts influential life conditions of the parental family, socioeconomic and demographic characteristics of the individual, and race/ethnicity in relation to behaviors that put adolescents and adults at risk for contracting STDs (Figure 1). The level of engagement
Figure 1. Conceptual Model
in STD risk-taking behaviors during adolescence is expected to predict the level of engagement in STD risk-taking behaviors in adulthood. Dotted arrows are used in the model to represent additional factors that may be predictors of sexual risk-taking behaviors, such as physical/genetic traits and other individual and cultural influences.
CHAPTER 3. METHODS

This chapter is divided into four sections. The first section provides information about the data source and collection techniques. A detailed description of each variable used in the analyses is presented in the second section. Third, an empirical model based on the conceptual model is presented, and specific hypotheses are put forth. Finally, the fourth section provides information on the statistical analyses that were used, including correlational analyses and structural equation modeling analyses.

Data

Data were obtained from the National Survey of Men, conducted in 1991 by the Centers for Public Health Research and Evaluation, under a grant from the National Institute of Child Health and Human Development. The goal of the project was to "examine issues related to sexual behavior and condom use among men aged 20-39" (Tanfer, 1993, p. 83). A nationally representative sample was obtained for this study using multistage, stratified, clustered, disproportionate area probability sampling. African-American men were over-sampled to assure adequate representation in the analyses.

Trained interviewers collected data. Potential respondents were told that they would be asked about specific sexual and health-related behaviors and disease prevention practices. Interviewers assured respondents of the confidentiality and anonymity of the information provided, and efforts were made to ensure that the interview was conducted in a private location. Additional detailed information about the survey design, sampling technique, and data collection is provided by Tanfer (1993).
The project achieved a 70% response rate. A total of 3,321 men completed the interview process and contributed usable data. One hundred sixty men who reported anything other than exclusively heterosexual orientation over the 10 years preceding the survey are excluded for this study, as are 20 men who indicated that they had never engaged in vaginal intercourse. In addition, respondents who reported that their first experience of vaginal intercourse occurred when they were between 2 and 8 years old (72 individuals) were excluded from the current analyses, because this variable is crucial to the study. It is likely that these responses are invalid or that any vaginal sex that occurred between ages 2 and 8 was nonconsensual. (Analysis of involuntary sexual initiation is a most worthy study, but beyond the scope of this research.) Similarly, 18 men who reported that they did not know how old they were when they first had vaginal intercourse were excluded.

These exclusions reduced the usable sample size to 3,051. Of these, 2,833 respondents indicated they fell into one of the two racial categories that are the focus of this study. The final sample includes 1,125 African-Americans and 1,708 European-Americans. [Ninety-three percent of the usable sample size of 3,051 were either European-American (56%) or African-American (37%). Approximately 3% of those contributing sample data were Asian/Pacific Islanders, while approximately 1% were American Indians or Alaskan natives. The remaining 3% of respondents identified their racial background as other than the above or a mix. Two hundred and seven respondents (less than 7%) identified themselves as being of Hispanic or Spanish origin, regardless of race.]
Variables

The conceptual model was operationalized using nine variables that are included in the analyses. Means, standard deviations, and ranges for all variables included in the model, controlling for race, are presented in Table 1. Because a secondary data source was used in this study, variables were limited both in terms of quantity and quality. Ideally, multiple indicators of each construct would be included in the model. This study used single-item measures, which limits the internal validity as well as its reliability. Some of the information collected was less specific than desired for this study. For instance, a more accurate assessment of the effects of mother’s employment status would have been useful, including the length of employment and whether it was part-time or full-time. In addition, the data were collected through self-report. A higher degree of reliability may have been obtained if data also were collected from parents or sexual partners in addition to the respondents themselves. Finally, because the study is cross-sectional, some variables had to be measured retrospectively. This type of measurement must rely on the recall of respondents. Therefore, caution should be exercised in the interpretation of this research because of limitations related to variable measurement.

Life Conditions of the Parental Family

Variables representing the life conditions of the parental family include the following: mother’s education, mother’s employment status, and family structure. The first variable, mother’s education, refers to the highest grade or year of college completed by the mother or stepmother with whom the respondent grew up. For the purpose of recoding 244 missing values for the mother’s education variable, cross-tabulations
Table 1. Means, standard deviations, and ranges for all exogenous and endogenous variables according to race (European-American N=1,708; African-American N=1,125)

<table>
<thead>
<tr>
<th>Variable</th>
<th>European-American</th>
<th></th>
<th>African-American</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Range</td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Range</td>
</tr>
<tr>
<td>Mother's Education *</td>
<td>12.33</td>
<td>2.54</td>
<td>0-21</td>
<td>11.67</td>
<td>2.87</td>
<td>0-21</td>
</tr>
<tr>
<td>Mother's Employment *</td>
<td>0.68</td>
<td>0.47</td>
<td>0-1</td>
<td>0.47</td>
<td>0.39</td>
<td>0-1</td>
</tr>
<tr>
<td>Family Structure *</td>
<td>0.81</td>
<td>0.39</td>
<td>0-1</td>
<td>0.59</td>
<td>0.49</td>
<td>0-1</td>
</tr>
<tr>
<td>Age of Respondent *</td>
<td>30.65</td>
<td>5.83</td>
<td>19-41</td>
<td>29.64</td>
<td>5.98</td>
<td>19-40</td>
</tr>
<tr>
<td>Religiosity *</td>
<td>0.36</td>
<td>0.48</td>
<td>0-1</td>
<td>0.53</td>
<td>0.50</td>
<td>0-1</td>
</tr>
<tr>
<td>Respondent's Education *</td>
<td>13.62</td>
<td>2.61</td>
<td>6-21</td>
<td>12.91</td>
<td>2.00</td>
<td>0-21</td>
</tr>
<tr>
<td>Marital Status *</td>
<td>0.60</td>
<td>0.49</td>
<td>0-1</td>
<td>0.42</td>
<td>0.49</td>
<td>0-1</td>
</tr>
<tr>
<td>Age of Sexual Initiation *</td>
<td>16.82</td>
<td>3.15</td>
<td>9-29</td>
<td>15.19</td>
<td>2.95</td>
<td>9-34</td>
</tr>
<tr>
<td>Number of Partners *</td>
<td>13.22</td>
<td>20.31</td>
<td>1-144</td>
<td>19.32</td>
<td>26.03</td>
<td>1-144</td>
</tr>
</tbody>
</table>

* Significant at $p<0.001$
were performed, along with a preliminary analysis of variance, to ascertain whether the age of the respondent was associated with *mother’s education*. A significant relationship was found, indicating that missing values for *mother’s education* should be recoded according to the respondent’s age. Therefore, the range of respondents’ ages was divided equally into five categories. The mean education level of the respondent’s mother was computed within each of the five categories, and then missing values were imputed according to the mean education level of the respondent’s mother for that particular respondent’s age category. *Mother’s education* has a mean of 12 years, corresponding to being a high school graduate, and a standard deviation of 2.7.

*Mother’s employment* reflects whether the respondent’s mother or stepmother worked for pay for at least six months (full-time or part-time) when the child was between ages 5 and 15. An affirmative response was coded as 1 (73%), and all other responses were coded as 0 (27%). *Family structure* of the household in which the respondent lived at the age of 12 years was coded as 0 to represent all situations other than living with both biological or adoptive parents (27.5%) or 1 for respondents who did live with both parents at age 12 (72.5%).

Collecting information about a very specific point in time (i.e., at age 12) is a popular method of obtaining information on parental family structure (Ku, Sonenstein, & Pleck, 1993; Dorius et al., 1993; Forste & Heaton, 1988; Pick & Palos, 1995). The limitation of using this type of measurement is that it captures only one point in time, which may not be representative of the respondent’s entire childhood. This type of question brings to mind a particular period in the respondent’s life, however, which is
likely to result in an accurate response because it does not require the respondent to make an overall judgement about family structure over a longer period of time (i.e., between the ages of 5 and 15, which may be difficult to characterize). (The question used to assess mother's employment status does not have the same potential for inaccuracy as does the question on family structure, because it does not ask the respondent to summarize the entire period of time between ages 5 and 15, only to indicate whether or not his mother ever worked for at least six months during that period.)

Socioeconomic and Demographic Characteristics of the Individual

Variables representing socioeconomic and demographic characteristics of the individual include the following: respondent's age, respondent's religiosity, respondent's education, and respondent's marital status. In the past several decades, average age at the onset of sexual intercourse has been decreasing in the overall population (Hofferth et al., 1987; Warren et al., 1997). Moreover, age also has the potential to correlate directly with number of partners, because there are more opportunities to engage in sex with numerous partners over a long period of time. By including respondent's age in the analyses, the effects of birth cohort and number of years of potential sexual activity on both initial age and lifetime number of partners will be taken into account specifically in the model. Respondent's age was assessed as of the date of the interview by asking “How old were you on your last birthday?” The range for this variable was 19-41, with a mean of 30 years.

Research has shown an association between religious involvement and postponement of sexual activities among adolescents (Forste & Heaton, 1988; Ku et al.,
1993; Mott et al., 1996; Seidman et al., 1994; Thornton & Camburn, 1987). Therefore, religiosity was also included in the analyses. Specifically, data were collected regarding frequency of attendance at religious services. Responses were coded as a binary variable where 0 represents an attendance rate of less than once a month (63%) and 1 represents attendance of at least once a month (37%). Religiosity is expected to be a significant predictor of number of partners during adulthood, with those reporting more frequent attendance at religious services indicating fewer sexual partners than others.

Respondent's education is a continuous variable that reflects the highest grade of school or year of college completed by the respondent, given in terms of the number of years of formal education. This variable ranges from 0-21, with a mean of 13.4 years, which corresponds to some technical/vocational school or college. Approximately 15% of respondents had neither graduated from high school nor received a GED. Thirty-two percent did complete high school, but did not pursue additional schooling. Twelve percent reported that they had received four-year college degrees. Respondent's education is expected to be predicted by mother's education and is expected to be a significant predictor of number of partners during adulthood.

It has been clearly established that being married is correlated with having significantly fewer partners than being single (Binson et al., 1993; Hollander, 1993; Kost & Forrest, 1992; Leigh et al., 1993; Peterson et al., 1993; Smith, 1991; Somse et al., 1993). For this reason, marital status also was included in the model as a variable. Marital status is expected to predict the number of partners and is expected to be
predicted by age of the respondent. Currently married respondents were coded as 1, while those who were not currently married were coded as 0.

**Race/Ethnicity**

An important tenth variable in the analyses is *race*. In previous studies, efforts were made to prevent race and ethnicity from confounding results of the analyses because their effects are traditionally so strong. Specifically, there is a danger of the effects of race suppressing the effects of other variables in the model because of its relationship to the other variables. For this reason, the effects of race were controlled by conducting two parallel analyses, one using the European-American sample (N=1,708) and the other using the African-American sample (N=1,125). Controlling for race enhances interpretation of the influence of other variables on sexual risk-taking behaviors and provides results that can readily be translated into policy and programming recommendations. The same conceptual and empirical models will guide the analysis for both race categories.

Table 1 shows that, indeed, the traditional pattern holds true for the current study, as indicated by results of independent sample t-tests that were performed as part of the preliminary analyses. Significant differences were found between means for the European-American sample and the African-American sample on all variables in the model. As in previous studies, African-Americans reported a significantly higher number of lifetime sexual partners than European-Americans and a significantly younger age at sexual initiation than European-Americans.
**Behaviors that Increase STD Risk**

As discussed in the review of literature, the age of an individual at sexual initiation can be seen as an STD risk factor. *Age at initiation* also can be seen as a link between characteristics of the parental family and sexual risk-taking behaviors in adulthood. For this reason, it will be used as an intermediate variable. *Family structure, mother's education, mother's employment, family structure, and respondent's age* are expected to be significant predictors of *age of initiation.* In addition, *age of initiation* is expected to be a significant predictor of having multiple sex partners during adulthood.

*Age of initiation* was assessed in two ways. Respondents were asked first to give the month and year of the first time they had sexual intercourse. This date was compared with the respondent's date of birth to find his age at first intercourse. For respondents who were able to recall the year they first had sex but were unable to recall the month, the month of June was imputed. For those who were unable to recall the year of onset of sexual activity, the information was obtained by asking the same question in another way: “How old were you at the time (of your first experience with vaginal intercourse)?” The range for this variable is 9-35 and the mean is 16 years. Eleven individuals reported that they did not know the date or their age at the time of their first sexual intercourse experience. That group, along with seven others who refused or gave no answer, were excluded from further analysis.

Survey questions related to age at the onset of sexual activity are limited by the potential for recall bias. For most men in the survey, initiation of sexual activity occurred in adolescence, so they are being asked to report accurately on an event that may have
taken place as much as 20 or 30 years prior to the interview. The effects of recall bias have been at least partially controlled through the establishment of specific procedures to address this issue during survey design and administration. For instance, the survey used a structured format and included an alternative question format for those who could not remember the date of first intercourse, but who could remember their age at the time, as described previously.

Because of the sensitive nature of the question related to age at sexual onset, it also is susceptible to social desirability bias. Efforts were made during survey design and administration to reduce social desirability bias as well. For instance, interviews were conducted in private locations by trained, experienced staff who used appropriate discretion when seeking information on particularly sensitive topics such as STD history, number of partners, type of sexual contact, etc. For some questions, respondents were asked to read a set of response items from a card placed in front of them and to indicate only the letter of their response rather than being asked to provide a more explicit and direct verbal response to the interviewer.

Recall and social desirability bias are long-standing issues of concern in social science research. They are especially relevant to surveys addressing sexuality issues because of the strong pressure society exerts on individuals to conform to the norms consistent with the opinion of the day. For the purpose of addressing this issue, Lauritsen and Swiecegood (1997) studied inconsistency in reports of age at first intercourse. They found that adjusting for inconsistent reporting did not affect either the magnitude or the direction of predictor variables, and that most "substantive conclusions were not altered
when controls for inconsistency were included in analytic models of age at first intercourse” (p. 220).

The ultimate dependent variable, *number of partners*, reflects the total number of partners with whom the respondent reported having had vaginal intercourse over his lifetime. The range for this variable is 1-994. Forty-eight respondents (1.5%) reported a total number of partners that was greater than three standard deviations above the mean. These outliers were recoded to three standard deviations above the mean, or 144 partners. In addition, the median (8 partners) was imputed for 80 individuals with missing information for this item. *Number of partners* has a range of 1-144 and a mean of 15.37.

A large portion of respondents indicated having only one partner, creating a skewed distribution for this variable. A natural log transformation was performed during preliminary analyses, which resulted in a distribution that adequately approximates normality. Therefore, the log of the *number of partners* variable was used in the analyses. As with the age of sexual initiation variable, the accuracy of reporting *number of partners* is limited by the possibility of bias stemming from poor recall or social desirability of a response. Again, measures taken in survey design and administration will help control these types of bias. Final interpretation of this study must be made with these limitations in mind, however.

**Empirical Model and Hypotheses**

The empirical model used for the analysis is presented in Figure 2. The model includes three variables related to the life conditions of the respondent's parental family, four sociodemographic variables relating to the respondent, and two endogenous
Figure 2. Empirical Model
variables representing the respondent's level of STD risk-taking behaviors during adolescence and adulthood. The data provide an opportunity to measure directly the following parental family characteristics: mother's educational attainment, mother's employment status during the respondent's childhood, and family structure. These three variables, along with the respondent's age and level of religious involvement during adulthood, are the five exogenous variables in the model.

Age at sexual initiation is an endogenous variable that is expected to be predicted significantly and directly by the three exogenous variables that relate to the parental family (mother's education level, mother's employment status, parental family structure). A fourth exogenous variable, respondent's age, is also expected to predict age at sexual initiation, because of the documented decrease in average age of first voluntary sexual intercourse over the past several decades. Age of the respondent is expected to predict the number of partners in the lifetime, because of the comparatively long period of potential exposure to sexual activity that older individuals have. Age at sexual initiation is expected to be a predictor of the ultimate endogenous variable, number of lifetime sexual partners.

There are two additional endogenous variables in the model. Respondent's educational level is expected to be predicted by mother's educational level, in accordance with previous research. Respondent's educational level also is expected to be a significant predictor of the number of lifetime sexual partners. The nature of this prediction relates to an expectation that individuals who are highly educated will be informed and knowledgeable regarding STD risks and preventive behaviors. A variable
reflecting the respondent's marital status is the fourth endogenous variable. Marital status is expected to be predicted by the age of the respondent. Marital status also is expected to be a significant predictor of the number of lifetime partners. Previous research indicates that those who are married have fewer partners than those who are not married. Finally, the fifth exogenous variable, the respondent's reported level of religiosity in adulthood, is expected to predict significantly the number of lifetime sexual partners because most religious groups discourage members from engaging in nonmarital or extra-marital sexual activity.

Directions of the hypothesized relationships are given in Table 2. Early age at sexual initiation is expected to be predicted directly by four exogenous variables. First, it is expected that high levels of mother's educational attainment will predict a later age at sexual initiation, because of high parental aspirations for the child and increased parent-child communication. Thereby, children of educated mothers will be encouraged to develop goals that include furthering their education beyond high school, and they will be more aware of how taking early sexual risks could preclude attainment of these goals. Because educational attainment is positively correlated with socioeconomic status, highly educated mothers are less likely than others to be lacking resources to send children to college or vocational school, so college is indeed a realistic and valued goal for these youth.

Second, it is expected that early age at sexual initiation will be predicted by having a mother who was employed outside the home during the respondent's childhood
Table 2. Directions of hypothesized relationships among variables (controlling for race) *

<table>
<thead>
<tr>
<th>Exogenous Variables</th>
<th>Respondent's Education</th>
<th>Marital Status</th>
<th>Age of Initiation</th>
<th>Number of Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother's Education</td>
<td>+</td>
<td>NA</td>
<td>+</td>
<td>NA</td>
</tr>
<tr>
<td>(continuous)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mother's Employment</td>
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<td>NA</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>(employed = 1)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(else = 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Structure</td>
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<td>NA</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>(intact = 1)</td>
<td></td>
<td></td>
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<tr>
<td>(nonintact = 0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondent's Age</td>
<td>NA</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>(continuous)</td>
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<tr>
<td>Religiosity</td>
<td>NA</td>
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<td>NA</td>
<td>-</td>
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<tr>
<td>(once/month or more</td>
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</tr>
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<td>-</td>
</tr>
<tr>
<td>(continuous)</td>
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<td>NA</td>
<td>NA</td>
<td>-</td>
</tr>
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<tr>
<td>= 1)</td>
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<td>-</td>
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<tr>
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</table>

* N=2,833
because of a decreased level of parental supervision that may provide adolescents with the opportunity to engage in behaviors that otherwise would not be allowed, such as sexual activity. Third, it is expected that young age at sexual initiation will be predicted by a nonintact parental family structure, as demonstrated in previous research. There are several possible explanations for this relationship. Children who are raised in nonintact parental family structures are likely to experience a comparatively high level of independence and responsibility within the household, which may push them to assume adult-like roles. The pressure to take on mature household roles may, for a child, be carried into other realms of behavior, encouraging them to believe they are ready for other adult role expectations, such as sexual activity. In addition, single parents who date and become sexually active in a nonmarital situation or who remarry, convey less rigid values to their children regarding premarital sex or multiple life partners, thus reducing the prohibition on premarital sex for the children. Fourth, it is expected that young age of the respondent will predict a young age at sexual initiation, as suggested by previously cited research showing that average age of sexual initiation is decreasing over time.

It is expected that the four exogenous variables will affect the number of lifetime partners indirectly through the age of initiation. Specifically, early age at sexual initiation is expected to predict directly a high number of lifetime partners. Because the family is the primary source of norms and role models, it is expected that variables related to the parental family will continue to affect sexual risk-taking behaviors in adulthood, aside from the impact they have through the age of sexual initiation variable. Therefore, two exogenous variables, mother's employment status and family structure, also are expected
to affect directly the number of partners in adulthood. Specifically, a high number of partners will be predicted by growing up in a nonintact family structure and in a family where the mother was employed outside the home.

In accordance with previous research, frequent attendance at religious services is expected to predict a low number of lifetime sexual partners. Finally, it is expected that the age of the respondent will be related to the likelihood of being married, with older respondents more likely than younger respondents to be married. Being married, in turn, will predict significantly and directly a low number of lifetime sexual partners. These hypotheses also are in accordance with previous research.

**Statistical Analyses**

*Correlational Analyses*

The Statistical Package for the Social Sciences (SPSS) was used to complete preliminary analyses, including the computation of a zero-order correlation matrix. No unexpected correlations were found. Descriptive statistics also were calculated, including frequencies, means, standard deviations, and ranges of variables that are included in the hypothesized model. In addition, independent sample t-tests were used to evaluate the hypothesis that the means for all variables did not differ according to race.

*Structural Equation Modeling*

Structural equation modeling using AMOS 3.6 (Arbuckle, 1997) was used to analyze the data. This type of statistical analysis was chosen because of its ability to evaluate complex predictive models that incorporate multiple causal relationships. This method permits estimation of not only direct effects of one variable on another, but also
the indirect effects on dependent variables as mediated through intervening variables. Structural equation modeling thus allows for estimation of the total effects of all pertinent variables on the dependent variables when the direct and indirect effects are summed (Bollen, 1989). In addition, structural equation modeling facilitates comprehensive evaluation and respecification of the hypothesized model by producing fit statistics and modification indices that permit multiple overall model comparisons as well as assessment of the significance of individual path coefficients.

The purpose of the analysis was to ascertain causal patterns among variables selected to represent certain individual and family characteristics and sexual risk-taking behaviors at two points in the respondent’s lifetime. The two endogenous variables of particular interest in this study are age at sexual initiation (reported retrospectively) and lifetime number of vaginal sex partners. These two variables measure sexual risk-taking behaviors at two different times. Because only men who have experienced vaginal sex were included in the sample, the age of initiation variable measures a behavior that occurred some time before administration of the survey. The second measure of sexual risk-taking behavior, number of partners, provides a representation of the respondent’s total lifetime sexual risk, up to and including the time of the interview. Because the respondents’ ages ranged from 19-41 at the time of the survey, there is undoubtedly a great deal of variation in the number of years that have transpired between the initial sexual contact and the time of the interview. Respondents in their early 20s may have initiated sexual activity shortly before the interview, while older respondents are likely to have been sexually active for years since their initial vaginal sex experience. Therefore,
although age at sexual initiation is a temporal antecedent to number of lifetime partners, there is considerable variation in the amount of time separating initial sexual experience and the measure of number of partners, which is current to the time of the interview.

The first step in structural equation modeling is the *a priori* specification of a model, as guided by previous research and the theoretical framework. As illustrated in Figure 2, the conceptualized causal pathways for both the European-American and the African-American models involve four endogenous variables: respondent's education, marital status, age at voluntary initiation of vaginal sexual intercourse (age of initiation), and number of sexual partners over the respondent's lifetime (number of partners). The latter two variables are of primary interest because they are measures of STD risk-taking behaviors during adolescence and adulthood, respectively. Religiosity, respondent's education, marital status, and age of initiation are treated as exogenous to the ultimate endogenous variable, number of partners. Mother's employment status, family structure, and respondent's age are expected to predict initial age directly and to predict number of partners indirectly through initial age as the intermediate variable. Respondent's age also is expected to predict indirectly the number of lifetime partners as mediated through marital status. Mother's educational attainment is expected to predict directly the respondent's educational attainment, which is, in turn, expected to predict directly the number of lifetime sexual partners in adulthood.

Because the survey content does not lend itself to the incorporation of latent constructs into the conceptual model, for the purposes of the analyses, all factors in the model are treated as observed variables measured with no error (Mueller, 1996).
Structural equation modeling software was used to create a covariance matrix, a required preliminary step to parameter estimation. Next, maximum likelihood criteria were used to ascertain the point at which successive iterations failed to continue improving the fit of the model to the two racial categories of observed data (Kelloway, 1998). The maximum likelihood approach to parameter estimation was chosen because of its consistency when used with large data sets that are normally distributed, and also because it permits use of the chi-square ($\chi^2$) statistic in assessing model fit (Mueller, 1996).

Assessing the fit of the structural models began with examination of the individual parameter estimates for obvious inconsistencies or apparent contradictions to the hypothesized structure. Next, the strength of the relationships between variables was assessed to provide a measure of how well each hypothesized exogenous variable predicted the corresponding endogenous variables in the models. Parameter estimates were divided by their respective standard errors to provide t-ratios that were used to evaluate the significance of each parameter estimate (Mueller, 1996).

After evaluation of individual parameter estimates, assessment of the models proceeded with evaluation of the overall fit between the data and the hypothesized model. Model assessment was accomplished through the use of the chi-square ($\chi^2$) statistic, chi-square/degrees of freedom ratio ($\chi^2$/df), goodness of fit indices including the goodness of fit index (GFI) and the adjusted goodness of fit index (AGFI), the root mean square error of approximation (RMSEA), standardized and unstandardized regression coefficients, and $R^2$ values.

Model trimming was guided by empirical standards. Specifically, when a
parameter estimate was not significantly different from zero at the $p < 0.05$ significance level, its corresponding path was constrained to zero, deleting the path from the model. This procedure results in a more parsimonious model by eliminating unnecessary paths. Final assessment of model fit included comparisons among alternate models. Comparisons were made between the original conceptual models and the modified models that were created by constraining insignificant paths, using the procedure just described, for both categories of race.
CHAPTER 4. RESULTS

The results of the data analyses are presented separately according to the race variable. First, zero-order correlations between the variables in the model are presented. Selected correlations are highlighted. Next, the findings of the structural equation modeling procedures are presented, first for European-Americans and next for African-Americans. Finally, results of model trimming procedures are presented for each race.

Correlational Findings

Zero-order correlation coefficients were computed for the nine variables in the model, controlling for race (see Tables 3 and 4). Most correlations are significant at $p < 0.05$. Within the European-American sample, the two highest correlations are between age at sexual initiation and the log of the lifetime number of partners, $r = -0.54$, $p < 0.01$, and between respondent’s age and marital status, $r = 0.38$, $p < 0.01$ (N=1,708). The third and fourth highest correlations among the European-American group are between respondent’s education and age at sexual initiation, $r = 0.35$, $p < 0.01$, and between respondent’s education and mother’s education, $r = 0.34$, $p < 0.01$. There are no unexpected correlations either in terms of magnitude or direction of the relationships.

Among African-Americans, the two highest correlations are between the age at sexual initiation and the log of the lifetime number of partners, $r = -0.40$, $p < 0.01$, and between respondent’s age and marital status, $r = 0.39$, $p < 0.01$ (N=1,125). These are the same combinations of variables that resulted in the highest zero-order correlations for the European-American sample. The third and fourth largest correlations within the African-
<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
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<td>1. Mother's Education</td>
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<td>.12**</td>
<td>.01</td>
<td>-.10**</td>
<td>-.01</td>
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<td>.08**</td>
<td>.05</td>
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<td>.10**</td>
<td>.14**</td>
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<td></td>
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<td>.20**</td>
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<td>8. Age at Sexual Initiation</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>1.00</td>
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* Significant at p<0.05, **Significant at p<0.01
Table 4. Zero-order correlation matrix, African-American sample (N=1,125)

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<tr>
<th>Variables</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<td>-.01</td>
<td>.17**</td>
<td>-.15**</td>
<td>-.07*</td>
<td>.02</td>
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<td>2. Mother's Employment</td>
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<td>-.05</td>
<td>.07*</td>
<td>-.03</td>
<td>.06*</td>
<td>-.08**</td>
<td>-.11**</td>
<td>.07*</td>
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<td>.09**</td>
<td>.06*</td>
<td>.08**</td>
<td>-.08**</td>
</tr>
<tr>
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<td></td>
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<td>.01</td>
<td>.11**</td>
<td>.39**</td>
<td>.09**</td>
<td>.07*</td>
</tr>
<tr>
<td>5. Respondent's Religiosity</td>
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<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>.11**</td>
<td>.15**</td>
<td>.11**</td>
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<td>6. Respondent's Education</td>
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<td></td>
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<td>.10**</td>
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<td></td>
<td>1.00</td>
<td>.09**</td>
<td>-.13**</td>
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<td>8. Age at Sexual Initiation</td>
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<td></td>
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<td>9. Number of Partners (Log)</td>
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<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

* Significant at p<0.05, ** Significant at p<0.01
American group are between respondent's age and mother's education, \( r = .26, p < 0.01 \), and between the respondent's education and mother's education, \( r = .16, p < 0.01 \). The latter correlation is lower than the correlation between respondent's education and mother's education for the European-American sample. Again, there are no unexpected correlations in terms of either magnitude or direction of the relationships.

**Structural Equation Modeling Analyses**

**Testing the Model for European-Americans**

AMOS software was used to perform the structural equation modeling analyses. The maximum likelihood estimation procedure was used to calculate estimates of model parameters. The first step in assessing the fit of the model was to examine the direction of the path coefficients. The signs of each estimated coefficient were in the direction expected in the hypothesized model. Direction and magnitude of the path coefficients are given in Figure 3 and Table 5. The unstandardized estimates were divided by the corresponding standard errors to produce critical ratios. An absolute value of the critical ratio of two or greater corresponds to an estimate that is significant at the \( p < 0.05 \) level.

In the European-American sample, there was only one estimate that did not achieve significance, corresponding to the predictive ability of mother’s employment status on number of partners. Therefore, the hypothesis that mother’s employment outside the home would predict directly a large number of lifetime sexual partners did not hold true for the European-American group. All other estimates were significant.

The magnitudes of the standardized path coefficients were compared to assess the strength of the relationships within the model. As hypothesized, mother’s level of
Figure 3. Standardized path coefficients for empirical model where race=0 (European-American) N=1,708
* Significant at p<0.05
Table 5. Standardized regression coefficients for conceptual model where race=0 (European-American) N=1,708

<table>
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<th>Exogenous Variables</th>
<th>Endogenous Variables</th>
<th>Marital Status</th>
<th>Age of Initiation</th>
<th>Number of Partners</th>
</tr>
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<td>.104*</td>
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<td></td>
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<tr>
<td>(continuous)</td>
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<td>(nonintact = 0)</td>
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<td>.244*</td>
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<tr>
<td>Religiosity</td>
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<td></td>
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</tr>
<tr>
<td>(else = 0)</td>
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</tr>
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</tr>
<tr>
<td>(else = 0)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Age of Initiation</td>
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<td>(continuous)</td>
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<tr>
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<td>.146</td>
<td>.054</td>
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<td>(df=13)</td>
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<td>p-value</td>
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<td></td>
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<td></td>
<td>Root mean squared error of approximation (RMSEA)</td>
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</table>

* Significant at \( p < 0.05 \)
educational attainment directly predicted respondent’s level of educational attainment \((\gamma = .336, p < 0.05)\). Also as hypothesized, respondent’s age predicted marital status. Reporting an age near the upper end of the range (19-41) was predictive of being married \((\gamma = .382, p < 0.05)\). Respondent’s age was the best predictor of age at sexual initiation \((\gamma = .155, p < 0.05)\), followed by family structure \((\gamma = .107, p < 0.05)\). Mother’s education \((\gamma = .104, p < 0.05)\) and mother’s employment status \((\gamma = -.052, p < 0.05)\) were significant predictors of age at sexual initiation. As hypothesized, growing up in an intact family and having a highly educated mother and a mother who was not employed outside the home predicted delayed sexual initiation among European-Americans.

Six variables were significant and direct predictors of the lifetime number of sexual partners. In order of magnitude, they are: age of sexual initiation \((\beta = -.551, p < 0.05)\); respondent’s age \((\gamma = .244, p < 0.05)\); marital status \((\gamma = -.188, p < 0.05)\); religiosity \((\gamma = -.088, p < 0.05)\); family structure \((\gamma = -.079, p < 0.05)\); and respondent’s education \((\beta = .078, p < 0.05)\). As hypothesized, a high number of lifetime sexual partners was predicted by early age at sexual initiation, high age (within the range of 19-41 years), not being married, infrequent attendance at religious services, and growing up in a nonintact family. Contrary to expectations, a low level of education among respondents was not predictive of a high number of sexual partners.

The overall fit of the model to the data for the European-American sample was assessed using four fit indices (see Table 5). The chi-square value was 443.024.
which indicates that there is a significant difference between the covariance matrix produced by the model and that produced by the observed data. The value of the chi-square statistic is affected by sample size. When sample size is very large, as in this study, the chi-square statistic may be significant even when the differences between the model-implied covariance matrix and that produced by the actual data are very minimal (Hoyle, 1995; Kline, 1998). For this reason, comprehensive assessment of fit requires that other indicators of fit be examined in addition to the chi-square value.

A second fit index that will be used for assessing overall fit is the goodness of fit index (GFI), the value of which was .95, indicating satisfactory fit. When this statistic is adjusted for the degrees of freedom in the model (AGFI), its value is reduced to .81. The AGFI value reflects model complexity. The value of the root mean square error of approximation (RMSEA) is .14. The RMSEA is based upon differences between the residuals produced by the implied and the actual covariance matrices. Low values indicate that there is very little difference between the two sets of residuals. Values below .10 are desirable. Taken together, the chi-square, GFI, AGFI, and RMSEA values indicate that, although the model is not an outstanding fit to the data, the fit is adequate. The amount of variance in age at sexual initiation that is explained by the model is 5%. The amount of explained variance in the total number of lifetime sexual partners over the lifetime is 36%.

**Testing the Model for African-Americans**

Again, the first step in assessing the fit of the model was to examine the direction of the path coefficients. Directions and magnitudes of the path coefficients are given in
Figure 4 and Table 6. Most of the signs of estimated coefficients were in the directions expected in the hypothesized model. There were two exceptions, however. The directions of the paths from respondent’s age to marital status and from marital status to the number of partners were opposite of what had been expected. In this sample, older age was not a significant predictor of being married. In fact, older age was a significant predictor of not being currently married among African-Americans. Furthermore, being married did not predict a low number of lifetime sexual partners, as expected. Instead, being unmarried predicted a low number of lifetime sexual partners. The zero-order correlations between respondent’s age, marital status, and number of partners, however, were in the directions expected (see Table 4), indicating that either a single variable or a set of variables is acting as a distorter, converting the direction of the relationships (Rosenberg, 1968).

In the African-American sample, there were four estimates that did not achieve significance, corresponding to the predictive ability of mother’s education on age at initiation and of mother’s employment status, religiosity, and respondent’s education on number of partners. Therefore, the hypotheses related to these variables were not supported. All other estimates were significant. As hypothesized, mother’s level of educational attainment predicted respondent’s level of educational attainment (γ = .165, p < 0.05). Mother’s educational attainment, however, did not predict age at sexual initiation. Furthermore, respondent’s educational attainment did not predict number of partners. Therefore, among African-Americans, neither of the educational attainment variables contributed to the model as they did for European-Americans.
Figure 4. Standardized path coefficients for empirical model where race=1 (African-American) N=1,125
* Significant at p<0.05
Table 6. Standardized regression coefficients for conceptual model where race=1 (African-American) N=1,125

<table>
<thead>
<tr>
<th>Exogenous Variables</th>
<th>Respondent's Education</th>
<th>Marital Status</th>
<th>Age of Initiation</th>
<th>Number of Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother's Education (continuous)</td>
<td>.165*</td>
<td></td>
<td>-.036</td>
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</tr>
<tr>
<td>Mother's Employment (employed = 1)</td>
<td></td>
<td>-.094*</td>
<td>.019</td>
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<tr>
<td></td>
<td>(else = 0)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Family Structure (intact = 1)</td>
<td></td>
<td>.067*</td>
<td>-.053</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(nonintact = 0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondent's Age (continuous)</td>
<td></td>
<td>-.394*</td>
<td>.066*</td>
<td>.164*</td>
</tr>
<tr>
<td>Religiosity (once/month or more = 1)</td>
<td></td>
<td></td>
<td></td>
<td>-.025</td>
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<tr>
<td></td>
<td>(else = 0)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Respondent's Education (continuous)</td>
<td></td>
<td></td>
<td></td>
<td>.045</td>
</tr>
<tr>
<td>Marital Status (currently married = 1)</td>
<td></td>
<td></td>
<td></td>
<td>.155*</td>
</tr>
<tr>
<td></td>
<td>(else = 0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of Initiation (continuous)</td>
<td></td>
<td></td>
<td></td>
<td>-.397*</td>
</tr>
<tr>
<td>R²</td>
<td>.027</td>
<td>.155</td>
<td>.023</td>
<td>.192</td>
</tr>
<tr>
<td>$\chi^2$</td>
<td>116.797</td>
<td>(df=13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>&lt;.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goodness of fit index (GFI)</td>
<td>.977</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted goodness of fit index (AGFI)</td>
<td>.919</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Root mean squared error of</td>
<td>.084</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>approximation (RMSEA)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

* Significant at $p < 0.05$
The magnitudes of the standardized path coefficients were compared to assess the strength of the relationships within the model. The strongest predictor of age at sexual initiation was mother’s employment ($\gamma = -.094, p < 0.05$), supporting the hypothesis that boys whose mothers spend more time working outside the home initiate sexual activity at an earlier age than others. Family structure produced the second largest magnitude of the variables predicting age at sexual initiation ($\gamma = .067, p < 0.05$). As hypothesized, growing up in an intact family predicted a delayed age at sexual initiation among African-American respondents in comparison to growing up in a nonintact family. Respondent’s age also was a predictor of age at sexual initiation in the direction expected ($\gamma = .066, p < 0.05$). Age at sexual initiation was positively predicted by age of the respondent.

Three variables were significant and direct predictors of the lifetime number of sexual partners. In order of magnitude, they are: age of sexual initiation ($\beta = -.397, p < 0.05$); respondent’s age ($\gamma = .164, p < 0.05$); and marital status ($\beta = .155, p < 0.05$). As hypothesized, a low number of lifetime sexual partners was predicted by a high age at sexual initiation and a young age of the respondent. Contrary to expectations, however, being married was predictive of a high number of partners among African-American men. Also contrary to expectations, four variables, including mother’s employment status, family structure, religiosity, and respondent’s education, were not significant predictors of the number of sexual partners in the lifetime.

The overall fit of the model to the data for the African-American sample was assessed using four fit indices (see Table 6). The chi-square value was 116.797 ($p < 0.001$). As with the results for the European-American sample, this indicates that
there is a significant difference between the covariance matrix produced by the model and that produced by the observed data. Because this statistic is extremely sensitive to sample size, the actual differences between the model-implied covariance matrix and that produced by the actual data may be very minimal even when the chi-square value is significant. For this reason, additional indicators of model fit were examined.

The value for the GFI was .98, indicating excellent fit. When this statistic is adjusted for the degrees of freedom in the model (AGFI), its value is reduced to .92, a value that also is indicative of satisfactory fit. The value of the root mean square error of approximation (RMSEA) is .08. Taken together, the chi-square, GFI, AGFI, and RMSEA values indicate that the model provides a satisfactory fit to the data. The amount of variance in age at sexual initiation that is explained by the model is 2%. The amount of explained variance in the total number of sexual partners over the lifetime is 19%.

**Trimming the European-American Model**

Model trimming procedures were performed for the purpose of attempting to produce a more parsimonious model that fits the data reasonably well. Paths were successively eliminated, or constrained to zero, according to significance. The path producing the lowest absolute value of the critical ratio (the unstandardized parameter estimate divided by the corresponding standard error) was deleted from the model first. In the European-American model, only one path in the original empirical model failed to produce a significant critical value, the one corresponding to the effects of mother’s employment status on the number of partners over the lifetime. Constraining this path to zero did not result in a significant change in the chi-square value, indicating that the path
between mother’s employment status and number of partners was not contributing to the model and should, indeed, be deleted. Figure 5 provides path coefficients for the first trimmed model, which differs from the original model only in the absence of the path from mother’s employment status to number of partners. Because this is a trimmed model, all paths shown are significant.

The elimination of this insignificant path, however, resulted in only the slightest improvements in the AGFI and RMSEA (see Table 7). Therefore, additional paths in the model were successively constrained to zero in order of absolute value of the critical ratios, with the path producing the lowest critical ratio being eliminated first. Substantial improvements were achieved only after eliminating all but five of the original paths from the model, leaving only four variables of the original nine, as shown in Figure 6. This drastic simplification of the model brought the chi-square value down to 16.995 ($p < 0.001$) and improved the AGFI to above the .90 level and the RMSEA below the .10 level. This resulted in a satisfactory fit across all of the fitting statistics being used. The significant paths remaining after the final model trimming procedures were: from respondent’s age to age of initiation ($\gamma = .167$), number of partners ($\gamma = .247$), and marital status ($\gamma = .382$); from age of initiation to number of partners ($\beta = -.553$); and from marital status to number of partners ($\beta = -.206$).

**Trimming the African-American Model**

There were three paths in the model that were not significantly different from zero when estimates were calculated for the African-American sample: mother’s education to
Figure 5. Standardized path coefficients for first trimmed model where race=0 (European-American) N=1,708
Table 7. Structural model comparisons

<table>
<thead>
<tr>
<th>Model</th>
<th>Sample Size</th>
<th>$\chi^2$</th>
<th>$p$-value</th>
<th>df</th>
<th>GFI</th>
<th>AGFI</th>
<th>RMSEA</th>
<th>$\Delta \chi^2$</th>
<th>$\Delta$ df</th>
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</thead>
<tbody>
<tr>
<td>Original, Race=0</td>
<td>1,708</td>
<td>443.024</td>
<td>p&lt;.001</td>
<td>13</td>
<td>.95</td>
<td>.81</td>
<td>.14</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1st Trimmed, Race=0</td>
<td>1,708</td>
<td>443.174</td>
<td>p&lt;.001</td>
<td>14</td>
<td>.95</td>
<td>.82</td>
<td>.13</td>
<td>+.150</td>
<td>+1</td>
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<tr>
<td>2nd Trimmed, Race=0</td>
<td>1,708</td>
<td>16.995</td>
<td>p&lt;.001</td>
<td>1</td>
<td>.99</td>
<td>.95</td>
<td>.10</td>
<td>-426.179*</td>
<td>-13</td>
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<tr>
<td>Original, Race=1</td>
<td>1,125</td>
<td>116.797</td>
<td>p&lt;.001</td>
<td>13</td>
<td>.98</td>
<td>.92</td>
<td>.08</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trimmed, Race=1</td>
<td>1,125</td>
<td>11.750</td>
<td>p&lt;.04</td>
<td>5</td>
<td>.99</td>
<td>.99</td>
<td>.04</td>
<td>-105.047*</td>
<td>-8</td>
</tr>
</tbody>
</table>

* Significant at $p<0.05$
Figure 6. Standardized path coefficients for second trimmed model where race=0 (European-American) N=1,708
age of initiation, respondent's education to number of partners, and religiosity to number of partners. These paths were therefore eliminated during the model trimming procedures. Although mother's education level was predictive of the respondent's education level, both of these variables were completely eliminated from the model during trimming because neither contributed to the prediction of either of the two endogenous variables of primary interest in this study, age at sexual initiation or number of lifetime sexual partners.

The deletion of these paths resulted in a significantly improved fit and a more parsimonious model (see Table 7). The chi-square value was reduced to 11.75 ($p < 0.04$). Both the GFI and the AGFI improved to .99, whereas the RMSEA was reduced to .04. These statistics indicate an excellent fit to the data. Variables and path coefficients for this trimmed model are given in Figure 7. All remaining paths are significant at the $p < 0.05$ level. The highest path coefficient magnitude was obtained by the prediction of number of partners from age at initiation ($\beta = -.401$).
Figure 7. Standardized path coefficients for trimmed model where race=1 (African-American) N=1,125
CHAPTER 5. DISCUSSION

Sexually transmitted diseases (STDs) continue to be a medical and social problem of epidemic proportion in the US and in many parts of the world. The purpose of this study is to contribute to the present body of knowledge in this area by exploring selected characteristics of the family of origin and relating them to age of onset of first sexual activity and to sexual risk-taking behaviors that occur later in adulthood. This purpose was accomplished through analysis of the National Survey of Men using structural equation modeling.

This chapter begins with a summary of the methods used in the study and a discussion of the major findings and conclusions of the structural equation modeling analyses. Three types of implications then are put forth, beginning with a discussion of how the current research fits within the context of family development theory. Second, programming implications are presented. Finally, implications for future research that may confirm and expand upon these findings are provided.

Summary of Methods

The statistical technique used to evaluate the relationships among the variables in the model was structural equation modeling. The same empirical model was used to evaluate variables from two separate sample groups categorized by race: an African-American sample and a European-American sample. The model for each group was trimmed using absolute values of critical ratios corresponding to each path within the model. Paths with the lowest critical ratios (in absolute value) were deleted first and other paths were deleted successively until an empirically adequate model was produced.
Assessment of model fit was done using a variety of statistics and indices. The empirical model was successful in explaining a substantial portion of the variance in number of sexual partners over the lifetime, particularly for European-Americans. The model was somewhat less successful in accounting for the variance in age at sexual initiation for both groups. An evaluation of overall model fit revealed that, although chi-square values were quite large, other measures of fit were satisfactory. Moreover, high chi-square values are not unexpected given the large sample sizes. Values for the adjusted goodness of fit index (AGFI) and the root mean square error of approximation (RMSEA) were indicative of adequate fit.

**Major Findings and Conclusions**

Because the sample sizes for the two categories of race were not of equal magnitude, results are not conducive to making direct comparisons between races in terms of the strength of each path coefficient. It is feasible, however, to make general comparisons between the two racial categories. One commonality was the finding that age at sexual initiation is a powerful predictor of the number of sexual partners in adulthood. This finding supports the hypothesis that sexual risk-taking behaviors initiated in youth carry through to adulthood. This study expands greatly upon findings of Devine et al. (1993), Greenberg et al. (1992), and Seidman et al. (1994), which all were based upon studies that either did not include males or included them under highly limiting conditions. Because the current study used a nationally representative sample of adult males from a range of ages, it provides crucial evidence of the connection between sexual risk-taking behaviors in adolescence and adulthood for men.
Another commonality between the two racial groups is that the respondent’s age is a powerful predictor of age at sexual initiation. This result supports previous research indicating that average age at sexual initiation is decreasing over time. Reasons for this change are not clear, but may include the affects of increased exposure to television and other forms of media over the past four decades, changes in social norms and values, or merely increased opportunities for youth to engage in sexual behaviors at a young age.

An important component of this study was the incorporation of variables measuring characteristics of the parental family. Indeed, parental family structure and mother’s employment status were predictive of the age at sexual initiation, within both the European-American and African-American samples. Among European-Americans, in fact, the effects of family structure continued to influence sexual risk-taking behaviors in adulthood, with those who indicated growing up in nonintact families reporting both a younger age at sexual initiation and a higher number of partners in adulthood than those who grew up with both biological or adoptive parents in the household. Again, by virtue of the quality of the sample, this study provides important confirmation of these relationships.

Regarding the influence of the respondent’s level of educational attainment, results contrasted with expectations. A high level of educational attainment was predictive of reporting a high number of lifetime sexual partners for European-Americans. This finding provides support for suggestions made by Binson et al. (1993) that education fosters a "break in the traditional family sexual norms," and that educated
individuals may have more opportunities to meet potential sexual partners than others (p. 271).

Further refinement of each model was accomplished through model trimming procedures. The simplified models obtained through model trimming procedures revealed which few variables in the model were of most importance in predicting the age at sexual initiation and the number of lifetime sexual partners. Model trimming for the European-American group resulted in a simplified model that included only four variables. The simplified model for the African-American group, however, included six variables, indicating that the processes involved in determining STD risk-taking behaviors are not the same for both races, and providing further support for the use of race as a control variable in the analyses.

Among European-Americans, model trimming revealed that the single most important predictor of age at sexual initiation is the age of the respondent, which relates to cohort effects. Three variables were revealed as most predictive of the number of sexual partners in the lifetime for European-American men: age at initiation, respondent's age, and marital status. As hypothesized, early age at initiation and not being married predicted a high number of sexual partners in the lifetime. Age of the respondent was positively related to the number of lifetime sexual partners.

Among African-Americans, model trimming revealed three variables that are most important in predicting age at sexual initiation: mother's employment status while the respondent was growing up, family structure, and age of the respondent. As hypothesized, having a mother who was not employed outside the home, experiencing an
intact parental family structure, and being older (from an earlier cohort), predicted a late age at sexual initiation. Three variables were revealed as most predictive of the number of sexual partners in the lifetime for African-Americans: age at initiation, respondent's age, and marital status. As hypothesized, early age at sexual initiation predicted high numbers of sexual partners in the lifetime. As predicted, age of the respondent was positively related to the number of lifetime sexual partners.

An interesting finding among African-American men was that age was negatively associated with being married. Furthermore, married African-Americans report higher, rather than lower, numbers of sexual partners over the lifetime as compared with those who were not married. These findings were not consistent with expectations. It was hypothesized that age would be positively associated with marriage, in that the likelihood of being married would increase with age. It also was expected that married individuals would report fewer lifetime sexual partners. Although these hypotheses were supported within the group of European-American men, they were not supported within the group of African-American men. These provocative findings will require further research to verify and explain.

Implications for Family Development Theory

Family development theorists propose that, over time, families move through a set of qualitatively distinct stages. A change in family structure prompts the transition into a new stage (Rodgers & White, 1993). A change in family structure necessarily brings concomitant changes in individual norms and roles within the family. Results of this study provide support for these assertions. The occurrence of a divorce, for example,
prompts a transition into a new stage for a family. Roles of each family member are
affected. Adults' roles may be altered to include changes in employment status, financial
status, dating status, household responsibilities, etc. Children's roles also change. They
may receive less adult supervision if one parent moves out and the other is employed
outside the home. Children are likely to take on new levels of responsibility within a
variety of realms as a result of the divorce. As they are given more freedoms, they may
be more likely to enter into sexual relationships precociously, which, in turn, may be an
explanation for the influence of family structure on age at sexual initiation.

The experience of growing up in a nonintact family is not always preceded by a
divorce, however. Many children are reared in nonmarital situations. In these instances,
there is no divorce to prompt a change in family structure and a transition to a new stage,
with its accompanying changes in norms and roles. Family development theory provides
another explanation for the relationship between family structure and age at sexual
initiation that holds for nonmarital families as well as for those where a divorce has
occurred. Family development theorists hold that the family environment is the primary
source of information for children about societal norms, and that parents are the primary
teachers. However, the roles and norms of single parents, whether divorced or never-
married, are not necessarily the same as those of others. Therefore, differences in
parental role-modeling or parental role expectations for children may provide the link
between family structure and sexual risk-taking behaviors of adolescents.

Because the family environment is so vital to a child's formation of social norms,
values, and role expectations, its influence is expected to be evident, not only throughout
childhood, but in adulthood, as well. In the current study, it was hypothesized that life conditions of the parental family would directly predict sexual risk-taking behaviors in adulthood (in addition to the indirect effects of parental family characteristics on number of partners as mediated by the age of sexual initiation). This prediction was not completely borne out, however. Although parental family characteristics had some direct predictive power in determining number of lifetime partners for European-Americans, parental characteristics were not significant, direct predictors of adult behaviors in African-American males, and were not included in the final trimmed model, even for European-American males. It is likely, however, that for an adult male, factors relevant to the current family, possibly including stages and transitions involving his own partner and children, take precedence over parental family characteristics in their influence on current norms, roles, and behaviors. Overall, then, the current research supports the validity of family development theory in explaining sexual risk-taking behaviors.

**Program Implications**

The overarching conclusion supported by results of both the original analyses and the model trimming procedures is that age at the onset of voluntary sexual intercourse is an extremely important variable in determining sexual risk-taking behaviors of adult males, namely, number of partners. This conclusion implies that there is enormous potential for reducing sexual risk in adult males by delaying the initiation of sexual activity. This conclusion underscores the critical need to reach youth with prevention and intervention programming efforts before they become sexually active. Sexuality
education should be provided within the school setting as well as within the home. Educational programming for both parents and children is recommended.

First, because the average age at sexual initiation is decreasing, it is recommended that sexuality-related education be provided within the school setting, in an age-appropriate manner, to young children and pre-adolescents, as well as to teens and young adults. African-American males consistently report earlier onset of sexual intercourse than others. Therefore, it is suggested that programming efforts reach African-American youth particularly early, while they are still in elementary school.

Because there is evidence that precocious sexual activity is common among children whose parents both work outside the home, the issue of after-school supervision needs to be addressed. A first step in this process may be to reaffirm to parents that adolescents continue to benefit from adult supervision, and that, even when children are physically mature enough to take care of themselves while parents are away, they still need close guidance, particularly within the social realm. Parents, however, are limited in terms of the level of supervision they are able to provide while they are away at their jobs. Therefore, it is recommended that school and community programs be initiated to provide widely available, organized, affordable, and enticing activities for youth during after-school hours and times when school is not in session. Policies supporting the need for increased, high-quality supervision over children and adolescents should be considered. Possibilities that deserve exploration include public funding or supplementation of childcare and increasing school hours, either making the school day longer or holding classes throughout the summer months.
Community programming for parents would help them learn skills for communicating effectively and comfortably with children about sexuality-related issues. All types of families need to be included in programming efforts. Because precocious sexual activity is most common among adolescents who have grown up in nontraditional family structures, it is recommended that special efforts be made to engage nontraditional types of families in programming, including single-parent, foster-parent, stepparent, and grandparent-headed families. Single-parent families and other nontraditional types of families face numerous barriers to receiving services. Nontraditional families are more likely to have financial constraints and to need assistance with child-care and transportation than others. These barriers frequently preclude their taking part in youth and family programs provided in school and community settings. By addressing some of these barriers, program providers are more likely to reach those who will benefit most.

Moreover, sexual risk-taking behaviors among youth frequently lead to STDs, the ramifications of which are far-reaching, not only for individuals, but for families, communities, and society. One possible perspective from which to approach the issue is to view STD prevention as a community undertaking. Collaborative efforts including parents, youth, school systems, employers, faith-based institutions, health-care providers, and other community representatives are likely to be most effective in reducing the overall incidence of STDs. For example, businesses and corporations could cooperate with schools to offer programs for parents at the work-site, or a church could provide transportation and child-care so that parents could attend a series of evening sessions with their children to talk about goals and values. When the support of the larger community
is garnered, there will be more human and material resources from which to draw for the development and implementation of high-quality programs.

**Implications for Future Research**

This study provides strong evidence from a nationally representative sample of males that age at sexual initiation is an extremely important determinant of the number of sexual partners in adulthood. Future research could expand upon this finding by clarifying the reasons for this relationship. Sexual behavior is a complex phenomenon that is influenced by a broad range of physical, social, intellectual, and emotional variables. Certainly, there are variables that were not included in this study that are predictors of sexual risk-taking behaviors and deserve attention in future studies. Exposure to media, physical/biological traits, family and peer communication, exposure to sexuality-related education, values, employment status and job type, personality, and social propensity are among the variables that need clarification in terms of their influence on sexual risk-taking behaviors in both adolescence and adulthood.

This study provides an important confirmation that characteristics of an individual's parental family have an influence on the age at sexual initiation. Specifically, future studies should include additional parental family variables to measure such factors as parental supervision of children and aspirations for children, parental values, extended family relationships, and sibling relationships. In terms of family structure, future studies could expand upon current findings by evaluating behavioral differences among adolescents reared in specific types of nontraditional family structures, making comparisons between those raised in single-mother and single-father families,
grandparent-headed families, foster families, adoptive families, and blended families, for
example.

This study provided further confirmation of the influence of cohort on age at
sexual initiation. Indeed, the average age of sexual initiation is gradually decreasing. An
important question that needs to be answered is why the age of sexual initiation has been
decreasing over recent decades. This answer to this question would provide another
avenue of opportunity for reducing the incidence of sexual risk-taking behaviors.

Future studies of the predictors of sexual risk-taking behaviors should include
significant representation of other races and ethnicities. Because previous studies have
suggested that poverty status is not the only salient factor related to race/ethnicity, future
studies should attempt to clarify the process by which race/ethnicity affects sexual risk-
taking behaviors. The processes involved are undoubtedly complex and will vary
according to the specific group being studied.

Finally, the unexpected findings related to age as a predictor of marital status and
marital status as a predictor of the number of lifetime sexual partners among African-
American men requires further exploration. There are many possible explanations for the
unexpected directions of the relationships between these sets of variables. Future studies
should incorporate additional variables, such as age at marriage, number of sexual
partners before, during, between, and after marriage, length of marriage, and stability of
nonmarital relationships among African-American men.
REFERENCES


Hollander, D. (1993). Young Americans, the unmarried and blacks are most likely to have had multiple partners in the past year. *Family Planning Perspectives, 25*, 92-93.


