Parental Negotiation of Autonomy and Relatedness and Its Direct and Indirect Influences on Adolescent Sexual Behavior

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Abstract

Current research does not always place adolescent sexual behavior within its broader social developmental context. Identifying factors such as aspects of the parent-adolescent relationship that may be related to risky sexual behaviors may provide a better understanding of what facilitates healthy transitions to sexual activity. Previous research suggests that parental relationships can serve as models for expectations in peer relationships. Additionally, intimate peer relationships may serve as substitutes for unsatisfactory parent-adolescent relationships. Based on these tenets, it was hypothesized that adolescents who observed their parents modeling the capacity to assert themselves while remaining related to the adolescents during disagreements will be able to transfer these skills and expectations to the negotiation of contraceptive use with romantic partners and to the avoidance of multiple sexual partners. Additionally, it was predicted that adolescents whose parents undermine their adolescents’ autonomy, especially within the context of negative parent-adolescent relationships, will seek independence in their peer relationships through sexual activity. It is expected that these adolescents will not be as prepared to protect themselves, and thus will be engaging in riskier sexual behaviors. The sample for the current study consisted of 137 moderately at-risk 9th and 10th grade adolescents and their parents, who participated in a revealed differences task and completed questionnaires at two time points, two years apart. Results indicated that female adolescents appeared to be at greater risk for engaging in unprotected sexual intercourse. Additionally, mothers’ and fathers’ displays of autonomy and relatedness as observed during disagreements have differential associations with male and female adolescents’ management of
their sexual behavior. As adolescents seek autonomy outside their families, they may do so in more deleterious ways in the absence of a supportive parental relationship. These findings suggest that parents may play an important role in the sexual socialization of their adolescents and may be useful targets for intervention and pregnancy prevention programs.
Adolescent Sexuality is a controversial issue, debated and discussed by parents, teachers, social scientists, policymakers, and teens themselves. The second half of the twentieth century has seen the largest gap in history between the period of biological maturation and the socially acceptable expression of sexual behavior (Katchadourian, 1990). Yet, some research suggests that becoming sexually active may be normative and indicative of healthy social development at certain ages in adolescence (Moore, 1997; O’Beirne, Allen, & Cullen, 1998). Sexual behavior, on the other hand, is clearly problematic when it is not handled safely (i.e., multiple sexual partners and irregular or ineffective contraception use). Earlier onset of sexual behavior is associated with risky sexual behavior because adolescents who have sex at earlier ages are more likely to engage in unprotected sex and to have multiple sexual partners (Alan Guttmacher Institute (AGI), 1994; Brooks-Gunn & Furstenberg, 1989; Kirby, 1997; Smith, 1997). Younger girls are more likely to have sex with older male partners (Males & Chew, 1996; Moore, Driscoll, & Lindberg, 1998), who themselves tend to have multiple partners and lower rates of condom usage (Weisman, et al., 1989). Risky sexual behavior may result in undesirable consequences, such as sexually transmitted diseases, pregnancy or childbearing, as well as suggest more broad dysfunction in middle adolescence (O’Beirne, et al., 1998). These negative outcomes of sexual behavior may threaten adolescents’ long-term physical and mental health, educational achievement, and employment opportunities (Chilman, 1988; Small & Luster, 1994; Voydanoff & Donnelly, 1990).
Some state and federal policies, including the 1996 Federal Welfare Law, allocated federal funds for sexuality education programs with the stipulation that abstinence from premarital sexual activity is the expected standard for school children. While postponing sexual intercourse is the best method for prevention of unwanted pregnancies and sexually transmitted diseases (STDs), the average age of intercourse in the United States is 16 years (Centers for Disease Control and Prevention, 1996), approximately 8 years before marriage. Sexual activity among American adolescents has increased over the past 20 years (Miller, Forehand, & Kotchick, 1999). By age 19, approximately 76% of girls and 85% of boys have had sexual intercourse (1995 National Survey of Family Growth and 1995 National Survey of Adolescent Males, cited in AGI, 1998).

Because adolescents tend to engage in short sexual relationships that are serially monogamous, they increase their exposure to multiple sexual partners and subsequently to risk for contraction of sexually transmitted diseases, including HIV infection (Centers for Disease Control, 1992; Overby & Kegeles, 1994). Of women aged 15-19, 60% have had two or more sexual partners since the onset of sexual activity (AGI, 1998). Surveys have shown that approximately 9% of all 10th grade females and 17-19% of all 12th grade females (not just the sexually active females) have had four or more sexual partners. Among high school males, roughly 16-21% of all 10th grade males and 22-39% of all 12th grade males have had four or more sexual partners (Centers for Disease Control, 1992; Luster & Small, 1994).
Differences in patterns of sexual behavior by gender and ethnicity

There are, however, gender and ethnic differences in patterns of sexual activity. One national survey reported small but consistent differences between boys and girls for age of sexual onset, such that boys typically have sex before girls (1995 National Survey of Family Growth and 1995 National Survey of Adolescent Males cited in AGI, 1998). This gap has narrowed as girls engage in sex at younger ages (Hofferth & Hayes, 1987). Minority adolescents and adolescents of lower socioeconomic status are more sexually active than white adolescents across all age groups. African-American adolescents engage in their first coitus earlier than either white or Hispanic adolescents (Kann, et al., 1996; Leigh, Morrison, Trocki, & Temple, 1994; Mott & Haurin, 1988; Seidman & Reider, 1994). In a high school sample, 81% and 62% of Black and Hispanic males and 67% and 53% of Black and Hispanic females reported having engaged in sexual intercourse, compared to 49% of Caucasian males and females. The ethnic difference in the onset of sexual experience between African-American and Caucasian adolescents may be attributable to socioeconomic factors, differences in the acceptability of early sexual experience, and family and neighborhood environment effects (Abrahamse, Morrison, & Waite, 1985; Franklin, 1988; Moore, Simms, & Betsey, 1986; Upchurch, Aneshensel, Sucoff, & Levy-Storms, 1999). Although black men are reported to have more partners than either white or Hispanic males, this difference disappears once number of years since first intercourse is controlled (Sonenstein, Pleck & Ku, 1991). Race and socioeconomic status have not been found to be related to the use of contraception as they have to early sexual activity (Irwin, et al., 1991).
Irregular use of contraception and its impact on adolescents’ rates of sexually transmitted diseases and pregnancy

From 1982-1990, condom use sharply increased among teenagers from 21% to 44% (AGI, 1998). Use at first intercourse increased during the 1980s as a result of the doubling of condom use. By 1995, use of contraception at first intercourse reached 78%, 2/3 of which was condom usage. About 1/6 of teenage women use two methods of contraception, typically condoms combined with another method (AGI, 1998). However, there are wide variations across studies and samples. The percentage of adolescents who reported using a condom the last time they engaged in sexual intercourse ranges from 27%-66% (Hingson, Strunin, & Berlin, 1989; Kegeles, Adler, & Irwin, 1988; Norris & Ford, 1991). These percentages are approximately two to three times higher than the rates reported in the 1970s before AIDS became a public issue (Forrest & Cates, 1993). Although adolescents may report an increased incidence of condom usage, only 10-20% of adolescents report using condoms consistently (DiClemente, et al., 1992; Kann, et al., 1996; Seidman & Reider, 1994). Caucasian adolescents report more consistent condom usage than do minority adolescents (Airhihenbuwa, DiClemente, Wingood, & Lowe, 1992; Brown, DiClemente, & Park, 1992).

Each year about 25% of sexually experienced adolescents (3,000,000 teens) acquire a sexually transmitted disease (Division of STD/HIV Prevention, 1993). With just one unprotected sexual encounter with an infected partner, a female adolescent has a 1% risk of contracting HIV, a 30% risk of acquiring genital herpes, and a 50% risk of getting gonorrhea (AGI, 1998). Chlamydia, syphilis and gonorrhea are more common among adolescents than
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any other age group in the United States (Bowler, Sheon, D’Angelo, & Vermund, 1992; Division of STD/HIV Prevention, 1993; Randolph & Washington, 1990). If these diseases remain untreated, they can lead to acute pelvic inflammatory disease, for which teens have higher hospitalization rates than older women (Rolfs, Galaid, & Zaidi, 1992). PID can cause infertility and lead to greater risk of ectopic pregnancy (AGI, 1998). Up to 15% of adolescent women who are sexually active have been found to be infected by the human papillomavirus (HPV), most with a strain that has been linked to cervical cancer (Moscicki, Palefsky, Gonzales, & Schoolnik, 1990). Additionally, 25% of all new human immunodeficiency (HIV) infections occur among people between the ages of 13-21. On average, two young people are infected with HIV every hour of every day (Centers for Disease Control and Prevention, 1998).

More than one million teenagers in the United States become pregnant each year (AGI, 1998; Children’s Defense Fund, 1998; Moore, Romano, & Oakes, 1996), and the rates are increasing among unmarried 14- to 16-year-old females (Bluestein & Starling, 1994). Adolescents in the United States have one of the highest pregnancy rates in the western world (Moore, Sugland, Blumenthal, Glei, & Snyder, 1995): twice the rate found in England, Wales, New Zealand or Canada, three times the rate found in Sweden, and nine times the rate found in Holland or Japan (AGI, 1994; AGI, 1998). Unintended pregnancies among adolescent girls account for approximately one fourth to one-fifth of all unintended pregnancies (AGI, 1998; Child Trends, 1996); approximately 78-85% of teenage pregnancies are unplanned (AGI, 1994; 1998). Since levels of adolescent sexual activity in the United States are comparable to
levels found in other Westernized countries (Jones, et. al., 1985), the higher pregnancy rates in
the United States appear to be attributable to inconsistent or incorrect contraception use (AGI,
1998; Miller & Moore, 1990). A sexually active adolescent who does not use contraception
has a 90% chance of becoming pregnant within one year.

Reviews have found that one-third of pregnant adolescents receive inadequate prenatal
health care (AGI, 1998). Children born to adolescent mothers are at increased risk of low birth
weight, childhood health problems, lower intellectual and academic achievement, social
behavior problems, and impulsivity problems than are children born to older mothers (AGI,
indicates that nearly 60% of the adolescents mothers are living in poverty at the time they give
birth (AGI, 1994). Although teen mothers are more likely to graduate from high school than in
the past, still only half of the women who had their first child at 17 or younger will have
graduated from high school by age 30, in contrast to 96% of women who do not have children
prior to age 20 (National Organization on Adolescent Pregnancy, Parenting and Prevention,
1995a). Public funds go disproportionately to adolescent mothers to assist paying for their
delivery costs and for their families (AGI, 1994; National Organization on Adolescent
Pregnancy, Parenting and Prevention, 1995a). Adolescent fathers are also adversely affected.
Thirty nine percent of teen fathers receive their high school diplomas by age 20, in comparison
to 86% of male adolescents who postponed parenting. Adolescent fathers attain lower
educational achievement and are
more likely to be employed in low wage jobs than are men who delayed having children (National Organization on Adolescent Pregnancy, Parenting and Prevention, 1995b).

Reviews of the statistics also reveal differences by race and socioeconomic status. Although 12% of all births in the United States are to adolescents, aged 15-19 (AGI, 1998), the numbers vary according to racial/ethnic group. Eight percent of white teens, 19% of black teens, and 13% of Hispanic teens get pregnant each year (AGI, 1994). Early childbearing may be more acceptable within African-American culture (Merrick, 1995; Smith & Zabin, 1993), but it is nonetheless associated with serious economic, health and educational costs. An overwhelming majority of the adolescents (83%) who give birth to their babies come from poor or low income families. The health of younger mothers and their children, especially African-Americans, is more likely to be compromised due to inadequate prenatal care, poor nutrition, and other factors (AGI, 1994; Clarke, 1986; National Organization on Adolescent Pregnancy, Parenting and Prevention, 1995b).

Given the potential deleterious consequences to adolescents as a result of their unprotected sexual activity, attempts have been made to educate adolescents about sexuality and the use of contraception. A recent meta-analysis (Kirby, 1997) concluded there was insufficient direct evidence to determine whether sex education programs decreased pregnancy, birth rates, STDs, or HIV rates. Although the research results have been mixed, some prevention programs which provided adolescents information about both delaying intercourse and contraception have been found to be effective in delaying the onset of intercourse, reducing the frequency of intercourse, increasing the use of contraception, and decreasing the number of
sexual partners (Kirby, 1997). Increased knowledge and access to contraception do not appear sufficient in protecting adolescents from risky sexual behaviors. For example, several characteristics associated with effective educational programs are unrelated to providing education about or access to contraception, including using a variety of teaching methods, addressing social pressures to engage in sex, and providing modeling of and practice of communication and negotiation skills. Research is as yet unable to demonstrate, however, which characteristics or which combinations of characteristics are essential to the overall success of a particular prevention program (Kirby, 1997). Prevention programs for those adolescents particularly at risk for contracting a STD, becoming pregnant, or causing a pregnancy are especially needed. The current study extends the current knowledge base regarding the specific correlates of risky sexual activity in a moderately at-risk sample in an attempt to assist in the identification of factors to be considered for intervention and prevention programs. This study examines several individual, familial and neighborhood characteristics identified by previous research to be correlates of risky sexual behavior: adolescent ego development and self efficacy, parents’ negotiation of adolescent autonomy and relatedness, and the socioeconomic and risk context of the adolescents’ environment.

*Correlates of Adolescent Sexual Behavior*

Although pubertal development plays a role in the initiation of sexual activity among adolescents (Mott, Fondell, Hu, Kowaleski-Jones & Menaghan, 1996; Udry, Talbert, & Morris, 1986), social forces, such as personal/interpersonal factors, parenting, and socioeconomic status, have been found to influence the behavioral expression of increased
sexual interest sparked by puberty (Katchadourian, 1990). Research that has focused on sexual
activity as a problem behavior has described the frequent co-occurrence of early sexual
behavior with other problem behaviors and personality traits, such as a high value on
individuality, poor school performance, low educational aspirations, delinquency, and drug use
(Allen, Leadbeater, & Aber, 1990; Elliott & Morse, 1989; Hofferth & Hayes, 1987; Small &
were the first to suggest that a single “problem behavior syndrome” can account for the co-
morbidity of these problem behaviors in adolescence. Failure to use contraception and
intercourse with multiple partners may reflect a general lack of impulse control and/or attraction
to risk. Because of the correlational nature of most of the research in this area, it is difficult to
ascertain whether these variables influence adolescents’ sexual behaviors, or whether other
factors such as family problems or the “problem behavior syndrome” account for the
association. Certain individual factors found to be associated with the effective management of
sexual activity are adolescents’ gender, stage of ego development, and self efficacy.

Individual Factors

Gender: Boys are more likely to engage in casual sex than girls, as they place less
emphasis on intimate relationships than girls (Coles & Stokes, 1985) and view sex from a
recreational orientation (DeLamater, 1987) or as a biological drive (Moore, & Rosenthal,
1998). As a result, males are more likely to initiate sex (Grauerholz & Serpe, 1985) and to be
receptive to sex with strangers and under a greater variety of conditions (Clark, 1990; Clark &
Girls are more likely to be the “gatekeeper” to sex, as they are more likely to be the ones controlling the onset of sexual activity within a dating relationship (Peplau, Rubin, & Hill, 1977).

*Ego Development:* As depicted by Loevinger (1976; Loevinger & Wessler, 1970), ego development is the “master trait” of personality, as reflected in a person’s outlook or worldview. Ego development is also described as a measure of executive functioning abilities, encompassing many factors related to personality development, including affective integration and expression, perceptions of self and others, coping mechanisms and moral judgment (Hart & Hilton, 1988; Kroger, 1996). Females typically demonstrate higher stages of ego development earlier than their male peers (McCammon, 1981). The Sentence Completion Test is one of the more typical measures of ego development used in the literature.

Ego development, as measured by the Sentence Completion Test (SCT), is thought to progress through a continuum of distinct stages reflecting increasing self-integration, impulse control, interpersonal style, differentiation and cognitive complexity (Hauser, 1993; Loevinger, 1979). Less mature stages of ego development reflect strong good-bad dichotomies, preoccupation with physical/mental/emotional control, and little tolerance for interpersonal or intrapersonal conflict. Mature stages of ego development, in contrast, indicate interpersonal sensitivity to responsibility, inner control, (Hauser, Powers, & Noam, 1991) and flexible and autonomous-related ways of handling conflicts, which acknowledge the interests of both the self and others (Allen, Hauser, Bell, & O’Connor, 1994; Labouvie-Vief, Hakim-Larson, & Hobart, 1987). Each of these correlates of more advanced ego development could facilitate the
negotiation of regular contraception use.

Several studies have found an association between immature levels of ego development and adolescents’ poor contraceptive use (Hart & Hilton, 1988; Speier, Melese-D’Hospital, Tschann, Moore, & Adler, 1997). Adolescent women who are effective users of contraception have higher levels of ego strength and more cognitive complexity than teen mothers or adolescents who obtained abortions. Contraceptive users were also more likely to weigh multiple considerations and perspectives, as well as their needs and the needs of others, in formulating decisions to problems (Resnick & Blum, 1985).

Higher levels of ego development have been associated with parental displays of autonomy and relatedness (Allen, Hauser, Bell, et. al., 1994). Higher levels of ego development have also been related to parenting styles, characterized by acceptance and a non-authoritarian approach to punishment, 22 years earlier (Dubrow, Huessman, & Eron, 1987). Higher ego stages of development are associated with perceptions of parental love and support; lower stages are associated with perceived parental demands (Gfellner, 1986). In particular, paternal interaction styles have been found to influence adolescents’ ego development. Fathers’ displays of autonomy (i.e., providing challenging situations during the discussion of a conflict) within the context of a close, supportive relationship were predictive of adolescents’ ego development two years later (Allen, Hauser, Bell, et. al., 1994). This finding suggests that fathers make important and unique contributions to adolescents’ views of themselves and their social world. This may be especially true in adolescence as fathers become more involved in the parenting of their adolescents (Youniss & Smollar, 1985). Fathers may also be more willing than mothers to
challenge adolescents’ views (Allen, Hauser, Bell, et al., 1994). Similarly, adolescents who
themselves elaborated their reasons and asserted themselves in family discussions had also
attained higher levels of ego development. Parents may be able to contribute to their
adolescents’ level of discourse through their acceptance of and empathy with their adolescents.
In contrast, parental behaviors which inhibit their adolescents’ discourse by judging, devaluing
or constraining them are associated with regressive and repetitious adolescent speech behaviors
(Kroger, 1996). Thus, it is expected that adolescents at higher stages of ego development
would come from families which support and engender warm and responsive behaviors (Tate,
1998). Adolescents at lower stages of ego development are more likely to live with parents
who are more demanding and judgmental. These adolescents are also more likely to behave
impulsively and engage in acting-out behaviors (Kroger, 1996).

Past research examining the links between ego development and contraceptive
behavior has typically been limited to cross-sectional designs, studying only females’ ego
development as it relates to contraceptive use. To date, no research has examined ego
development as it mediates the association between parental behaviors and the management of
sexual behavior.

Self Efficacy: Adolescent social competence as perceived by others has been linked to
adolescents’ expression of prosocial goals and expectations of positive outcomes (Allen,
Weissberg, & Hawkins, 1989; Parkhurst & Asher, 1985). Self efficacy has been defined as
the expectation for successful performance of competent behavior and the ability to exert
personal control (Bandura, 1990). Self efficacy is expected to influence the amount of effort
and persistence invested in the performance of a task (Bandura, 1977). Adolescents’ beliefs about their self efficacy appear to mediate the relation between negative family conditions in childhood and subsequent problem behaviors (Allen, Aber, & Leadbeater, 1990) and are related to perceived competence (Harter, 1982). As a characteristic of individuals, self efficacy has been linked to beliefs about control over social outcomes, avoidance of serious problem behaviors and adaptive behavior change (Allen, Aber, et al., 1990; Bandura, 1977; Schinke & Gilchrist, 1985; Weisz, 1986). Adolescents who do have difficulties in adjustment may perceive themselves as less competent, less in control, and less likely to achieve desired outcomes (Allen, Aber, et al., 1990). Beliefs about self efficacy have been associated with peer popularity, empathy, knowledge of contraception (Adams, 1983; Lieberman, 1981), and competence in social problem solving (Allen, Leadbeater, et al., 1990).

The majority of studies that have demonstrated links between adolescents’ self efficacy (perceived control over outcomes) and contraceptive use have focused on self efficacy specific to the management of sexual behavior. Adolescents, typically females, were asked how confident they felt in negotiating sexual activities with their partners. Adolescent girls have been especially targeted in this area of research because it is believed that safe sex programs fail to recognize the barriers that females may face in negotiating contraceptive use with their male partners (Holland, Ramazanoglu, & Scott, 1990; Wyn, 1994). Girls may feel more awkward negotiating with their partners about contraceptive use because they tend to focus on others’ needs rather than their own self-interests (Browne & Minichiello, 1994; Chodorow, 1978). Greater willingness to discuss contraception with partners has been associated with increased
condom usage (Catania, et al., 1989). Previous research typically relates individuals’ sexual self
efficacy to increased contraception usage (Basen-Engquist & Parcel, 1992; Kasen, Vaughn, &
Walter, 1992; Levinson, 1986), but others have measured only intentions to use contraception
and not actual behavioral outcomes (Hardeman, Pierro, & Mannetti, 1997). Men report greater
confidence in their ability to use condoms during sexual activity, but women report more
confidence in their ability to say no to unwanted sexual experiences (Galligan & Terry, 1993;
Hardeman et al.,1997; Rosenthal, Moore, & Flynn, 1991). It is important to recognize that
certainty in ability to perform certain activities does not necessarily mean that the behaviors
will occur (Rosenthal, et al., 1991). Other studies have found sexual self efficacy to be related
to risk taking in sexual activity because self efficacy is also related positively to amount of sexual
activity. It is speculated that individuals who feel more confident in their ability to assert
themselves may participate in increasing amounts of sexual activity, as well as be more
optimistic about their risk of contracting a STD (Seal, Minichiello, & Omodei, 1997). Higher
generalized senses of self efficacy have been associated with perceived ability to resist
unwanted sexual experiences (Zimmerman, Sprecher, Langer, & Holloway, 1995).

Adolescents’ general expectations about relationships are founded upon their
interactions and expectations of relationships with their parents and may mediate behavior in
other areas of adolescent functioning (Allen, Aber, et al., 1990; Kobak & Sceery, 1988; Main,
Kaplan, & Cassidy, 1985). Interactions with parents which undermine adolescents’ developing
sense of autonomy are expected to reduce adolescents’ sense of their own ability or self
efficacy to engage in competent behaviors in relationships with significant others, e.g., sexual
partners. Past failures with parents are hypothesized to generalize to relationships with others and lead to reduced efforts to persist in competent behaviors, such as contraceptive use.

Virtually no studies to date have examined the longitudinal prediction of adolescent sexual behavior and contraceptive use from beliefs about self efficacy. Previous research has also been limited by the homogeneity of the sample (e.g., only girls), focus on behavioral intentions and not behavior, limited measurement of sexual behaviors (e.g., only condom usage), or the exclusion of other correlates of adolescent sexual behavior (i.e., parental behaviors). The current study examined the influence of generalized self efficacy on adolescent management of sexual behavior cross-sectionally and longitudinally within a heterogenous sample. Additionally, adolescents’ beliefs about self efficacy were investigated as a mediator of possible effects of parent-adolescent interactions on adolescent sexual behavior.

*Parental Influences*

Within the last decade, there has been increased emphasis on the role of parents in influencing the sexual behavior of adolescents (Fisher, 1989; Jaccard & Dittus, 1991; 1993; Kotva & Schneider, 1990; Neer & Warren, 1988). Parents are assumed to play a large role in the sexual socialization of their children, yet research to date has been contradictory or unclear as to how this occurs. Research has differentiated between direct and indirect parental controls on adolescents’ behaviors (e.g., Seydlitz, 1991). Direct parental controls would include restriction and monitoring of adolescent behaviors and freedom, firm application of household rules, and direct parent-adolescent communication regarding sexual behavior and relationships.

Parents do not typically engage in direct communication with their children about sexual
topics (Katchadourian, 1990), perhaps because parents tend to underestimate their teens’ sexual experience (Jaccard & Dittus, 1991; Jaccard, Dittus, & Gordon, 1998) or because talking about sexual behavior may be considered a form of sexual interaction, and as such is avoided within families as part of the incest taboo (Katchadourian, 1990). Younger adolescents (7th and 8th graders) reported more difficulty discussing sex with their parents than discussing substance use. Unfortunately, adolescents also reported it is easier to refuse alcohol or marijuana than it is to resist pressure to engage in sex (Levy, et al., 1993). The impact of parent-teen communication on adolescent sexual behavior may have been underestimated, but it is still controversial (Jaccard & Dittus, 1991). Some studies have found that adolescents who received sexual and contraceptive information from their parents engaged in sexual intercourse less frequently, had fewer sexual partners, initiated intercourse at a later age, and used contraception more often than adolescents who received information from their peers (Leland & Barth, 1993; Treboux & Busch-Rosnagel, 1990). Programs designed to improve the communication between parents and their adolescents about sexuality have been shown to increase knowledge about sexuality and to foster a positive attitude toward and comfort with communication about sexuality issues for parents and adolescents (Benshoff & Alexander, 1993).

Parental communication has different effects on adolescent sexual behavior, however, when taking into account the gender of the adolescent and of the parent. For sons, discussions with mothers were related to lower levels of sexual behavior, whereas discussions with fathers were related to higher subsequent sexual activity (Kahn, Smith, & Roberts, 1984). Parents may
be more accepting of their sons’ sexuality than of their daughters’ (Treboux & Busch-Rossnagel, 1990). Fathers, but not mothers, may implicitly encourage the sexual activity of boys (Katchadourian, 1990). Neither parent may encourage girls’ sexual behavior for fear of unwanted pregnancies and other negative consequences.

**Indirect Parental Controls:** Indirect controls of adolescent behavior encompass several aspects of parenting. Parenting styles, which emphasize firm limits and control and provide acceptance and affection, have been consistently linked to the most positive outcomes for adolescent development (Baumrind, 1991; Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Paulson, 1994; Steinberg, Mounts, Lamborn, & Dornbusch, 1991. Parental behaviors that either only exert firm control or only provide acceptance are not associated with healthy adolescent adjustment. Parents may also indirectly convey their expectations for behavior through modeling behaviors in the context of broader issues. For instance, a family may encourage and model principles of self-restraint and delayed gratification, expecting their adolescent to transfer these concepts to sexual behavior. In this fashion, family interactions may portray general principles or skills (i.e., self-restraint) in their general modes of communication that convey expectations for sexual behavior and relationships. Indirect parental controls on adolescent sexual behavior, that is general parental attempts to influence their adolescents’ behaviors not specifically related to the discussion of sex and contraceptive use, are the focus of the current study.

Parents’ exertion of too much or too little control and discipline of their adolescents has been associated with increases in risky sexual activity among adolescents (Miller, McCoy,
Olson & Wallace, 1986; Newcomer & Udry, 1984, 1987; Patterson & Stouthamer-Loeber, 1984; Rodgers, 1999; Upchurch, et. al., 1999). Parents’ use of psychological control, including the use of guilt, anxiety, or the threat of the withdrawal of love (Livotsky & Dusek, 1985), has also been associated with adolescent sexual behavior. For example, girls’ early sexual behavior has been associated with their mothers’ setting of firm limits in the absence of a close, intimate relationship. Girls, in particular, may attempt to satisfy their desire for autonomy and relatedness in sexual relationships in the absence of fulfilling family relationships (Jacobs, 1994).

Adolescents may initiate sexual behavior as a way of rebellion against their parents to express defiance and autonomy (Giovacchini, 1986). Adolescents, particularly girls, who do not feel they have close, satisfying relationships with their parents may use their sexual relationships as substitutes (Brooks-Gunn & Furstenberg, 1989; Whitbeck, Conger, & Kao, 1993). In a recent study utilizing the data from this study, however, Moore (1997) found no evidence to suggest that girls’ sexual behavior was more strongly associated with family relationships than was boys’ sexual behavior.

It is clear that the quality of parent-adolescent relationships has been found to exert an impact on adolescents’ sexual behavior and may be viewed as a method of indirect control. Adolescents who have warm, close parental relationships and feel supported and accepted within their families delay sexual intercourse (DiBlasio & Benda, 1990; Inazu & Fox, 1980; Jaccard, Dittus, & Gordon, 1996; Jesser & Jesser, 1975; Luster & Small, 1994; O’Beirne, et al., 1998; Small & Luster, 1994; Upchurch, et. al, 1999), although some research has not found this connection (Newcomer & Udry, 1983). In a study of African-American families,
boys as well as girls, who had more satisfying maternal relationships were found to limit sexual activity (Jaccard, et al., 1996). Securely attached girls were more likely to have delayed sexual activity to a later age than insecurely attached girls. Adolescents may be learning through their relationships with their parents that it is possible to negotiate intimate relationships that are emotionally satisfying (Miller & Moore, 1990) and responsive to their needs. The expectations of responsiveness and the interpersonal skills for discussion of important issues may then be transferred to other intimate relationships, i.e., sexual relationships.

As mentioned earlier, adolescent autonomy is best achieved within the context of a close, supportive parental relationship. Within the literature of adolescent psychosocial development, autonomy has been defined in a variety of ways. For the purposes of this study, autonomy refers to self-perceived confidence in decision-making and discussion (e.g., Greenberger, 1984), as well as the ability to use principled or independent reasoning in interpersonal problem solving (Allen, Aber, et al., 1990; Allen, Hauser, Bell, et al., 1994; Allen, Hauser, Eickholt, Bell, & O’Connor, 1994; Steinberg & Silverberg, 1986). In the latter case, autonomy may be broadly construed as the ability to manage the interests of both the self and the other during interpersonal exchanges (Selman & Schultz, 1990). In this sense, it is also perceived as a psychological attribute of the individual which can generalize across settings, for example, adolescents who develop the capacity to function autonomously in relation to their parents can transfer this generalized ability to be self-reliant in their peer relationships as well, which include sexual relationships. For example, securely attached adolescents were more likely to have engaged in sex, but also to manage their sexual behavior more safely (i.e., use
contraception more frequently) than insecurely attached teens. The effects were moderated slightly by gender in terms of the initiation of sexual activity. In contrast, securely attached boys were more likely to have fewer sexual partners, less frequent sex, and generally less risky sexual behavior than insecurely attached boys, even when the quality of the parent-adolescent relationship (i.e., acceptance and psychological control) was controlled (Moore, 1997). Thus, it appears that adolescents are able to develop a sense of their own social competence and self-efficacy, within the context of supportive, but cognitively and socially challenging parental relationships.

Adolescents’ subjective sense of self-reliance differs significantly among professional families, white collar families, and blue collar families, with self-reliance reportedly highest in professional families. Girls in early adolescence demonstrate more emotional autonomy from parents than do boys. Although among boys there is no association between self-reliance and resistance to peer pressure, girls who report feeling self-reliant, also report being more autonomous in the face of peer pressure (Steinberg & Silverberg, 1986). It has been argued that too much autonomy promoted by parents in early adolescence may be indicative of and further exacerbate problems in the development of internalized controls (Dornbusch, et al., 1985; Patterson & Stouthamer-Loeber, 1984). Early promotion of autonomy by parents may be expected to undermine adolescents’ feelings of self-reliance or self-efficacy, and create a susceptibility to acting-out behavior. Adolescents who maintain the most emotional autonomy from their parents were least able to remain autonomous to peer pressure in regards to engaging in antisocial behavior (Steinberg & Silverberg, 1986).
Socioeconomic Context: Research investigating links among parents’ negotiation of their adolescents’ autonomy strivings, quality of parent-adolescent relationships, and adolescent adjustment has been conducted primarily within middle-class samples. Within these relatively low-risk samples, displays of autonomy (e.g., explaining and discussing reasons confidently during disagreements) have been linked to higher levels of adolescent ego development and self-esteem and to lower levels of adolescent hostility and depression. Behaviors that undermine adolescent autonomy (e.g., pressuring the adolescent to agree, or overpersonalizing the agreement) have been related to negative adolescent adjustment (Allen, Hauser, Bell, et al., 1994; Grotevant & Cooper, 1985; Hauser, et al., 1984).

The context in which these parenting behaviors are demonstrated, however, is important. In a recent study utilizing the current sample, Boykin & Allen (1998) found that in low-risk families, parental behaviors that undermined adolescent autonomy, e.g., pressuring adolescents to agree, overpersonalizing the disagreement, or recanting a position, were related to lower quality parent-adolescent relationships as has been traditionally found. In contrast, within families in a higher risk (urban, lower socioeconomic) environment, these same parental behaviors were associated with adolescents’ perceptions of their mothers as more trustworthy and more accepting. The authors speculated that adolescents may feel protected in these high risk environments and perceive their mothers as highly caring and invested in their well-being. In a low-risk environment these same behaviors may connote overprotection and be perceived by the adolescent as guilt-invoking and overly restrictive.

These findings are consistent with the assertion that in high-risk contexts it may be more
risky for adolescents to attempt to disengage from parental control (Gonzales, Cauce, Friedman, & Mason, 1996; Mason, Cauce, Gonzales, & Hiraga, 1996). Within the context of these higher risk neighborhoods, adolescents may have easier access to same-age and older peers who may be involved in illegal and/or dangerous activities (Krivo & Peterson, 1996). Thus, adolescents seeking autonomy within these neighborhoods do so in an environment that offers increased opportunity for risky behavior. Adolescents living with lower socioeconomic means may perceive a more restricted range of academic or employment opportunities and seek autonomy and identity in other behaviors identified as more “adult-like” and autonomous, e.g., early sexual behavior and motherhood (Elliott & Morse, 1989; Hofferth & Hayes, 1987; Miller & Moore, 1990; Small & Luster, 1994). Rates of sexual activity and early pregnancy increase as socioeconomic status decreases (Hogan & Kitagawa, 1985; Moore, et. al, 1986). Additionally, adolescents who perceive their neighborhoods as dangerous and physically deteriorated engage in sex earlier than adolescents who perceive their neighborhoods as safe (Upchurch, et. al., 1999).

The Current Study

The current study examined the individual and family correlates of adolescent sexual behavior in a moderately at-risk sample. The goal of this investigation is to add to the extant research a more complete understanding of the cross-sectional and longitudinal interrelations between individual (gender, ego development, and self efficacy) and family (negotiation of adolescent autonomy and relatedness) correlates of the onset and management of sexual behavior within its socioeconomic context. Environmental variables, such as the level of risk
found in the adolescent’s neighborhood, have been found to moderate the links among parental negotiation of adolescent autonomy, quality of the parent-adolescent relationship, and adolescent adjustment (Boykin & Allen, 1998). The majority of research in this area has relied on adolescent self reports of their parental relationships and individual adjustment. It is known that self-report alone can be a biased and unreliable account of the social interactions in which one participates (Nisbett & Wilson, 1977). Reliance on adolescent self-report also presents a shared variance problem when used to measure both predictors and outcomes. The current study utilized reports from both observers and parents on the qualities of the parent-adolescent relationship. The Autonomy and Relatedness coding system (Allen, et al., 1999) was designed to capture aspects of adolescent-parent interactions that are relevant to the critical tasks of adolescence. In addition, this system has been demonstrated to predict substantial additional variance in family interactions and adolescent outcomes from an existing observational measure (Allen, Hauser, Bell, et al., 1994). The Autonomy and Relatedness coding system yields four scales, which were used to operationalize parental negotiations of autonomy and relatedness in their interactions with their adolescents: autonomy displaying behaviors, relatedness promoting behaviors, autonomy inhibiting behaviors and relatedness inhibiting behaviors. **Autonomy displaying behaviors** reflect the ability to differentiate self from others, to think independently, and to assert oneself confidently in a discussion. **Relatedness promoting behaviors** are indexed by interest, involvement, and validation in the other person’s thoughts and feelings. **Behaviors that undermine autonomy** either undercut the other’s statements about his/her position directly or model behaviors which avoid discussion of reasons underlying the
disagreement. Undermining behaviors include inhibiting productive discussion by recanting one’s position, pressuring the other to agree, or overpersonalizing the disagreement to be about some feature of the person rather than their reasons for disagreeing. *Behaviors which undermine relatedness* or positive interaction, include interrupting or interfering with the other person’s opportunity to express their views, or making critical or devaluing statements about the other person (Allen, et al., 1999).

The current study employed a sample that is both heterogenous regarding gender and ethnicity, an advantage in an area of research that often examines homogenous populations (e.g. only African-American women). Additionally, participants were selected to reflect a somewhat riskier sample of adolescents, although the sample included adolescents who had engaged in sex, as well as those who had abstained. Thus, analyses also examined whether family processes linked to sexual behavior varied by choice of abstinence versus use of contraception as a means of asserting one’s needs in sexual situations. Because individuals with relatively high levels of sexual risk behavior have been found to have the lowest intentions to use condoms (Hardeman, et al., 1997), it is important that research provides a better understanding of the individual and family level correlates of adolescents at risk, particularly as they vary by socioeconomic context (high risk vs. low risk environment) to develop intervention programs that facilitate more effective management of adolescents’ sexual behavior.

*Specific Hypotheses and Rationale:*

The underlying rationale of the current study is that adolescents who develop the capacity to function autonomously in relation to their parents will also develop self-reliance in
their intimate relationships. The skills they observe being modeled or encouraged by their parents will then be transferred to their relationships and negotiations with sexual partners about protection from pregnancy. Previous research has emphasized the importance of granting adolescent autonomy in the context of a close parent-adolescent relationship. Adolescents who engage in problem behaviors may have had difficult achieving autonomy within the context of their relationships with their parents. Initiation of sexual behavior as an “adult-like” behavior is predicted to be one way in which adolescents may seek autonomy outside their families.

Adolescents who perceived their mothers as granting psychological autonomy reported more frequent use of contraception and less risky sexual behavior (Moore, 1997). This latter association occurred when the relationship was described as accepting. Parental behaviors which induce guilt to limit adolescents’ autonomy strivings were associated with less frequent use of contraception (Moore, 1997). Thus, it is expected that:

1) As depicted in Figure 1, parental behaviors that display autonomy (e.g., assert reasons for positions) and relatedness within the parent-adolescent relationship were expected to be associated with the positive management of adolescent sexual behavior, both cross-sectionally and longitudinally. It is expected that adolescents who have observed their parents model autonomous and related behaviors will be able to assert their own needs and be responsive within their sexual relationships by discussing the use of protection with their partners and managing their sexual behavior effectively (using reliable contraception more frequently and having fewer partners).
2) In addition, it is hypothesized that adolescents whose parents do not foster their autonomy will be engaging in sex to seek autonomy outside their family relationships. These adolescents, however, will not have had the previous experience within their families to develop the necessary skills for interpersonal communication and for asserting themselves in sexual interactions. Thus, it was expected that parental behaviors that undermine adolescents’ autonomy will be related to ineffective or unsafe management of adolescent sexual behavior (i.e. inability to discuss protection with partners, multiple partners, and irregular and ineffective use of contraception) (See Figure 1).

3) As previous research has indicated, however, the quality of the parent-adolescent relationship is an important correlate of the adolescent’s initiation of sexual behavior. Thus, it was expected that the observed behaviors that promote or inhibit relatedness between parents and their adolescents will moderate the association between parental behaviors that undermine adolescents’ autonomy and adolescents’ onset of sexual behaviors. First:

3a) Parental behaviors that undermine adolescents’ autonomy in the context of high parental promotion of relatedness between the parents and adolescents will be associated with adolescents’ delay of sexual intercourse, in addition to the unsafe and ineffective sexual practices described previously. Second:

3b) Parental behaviors that undermine adolescents’ autonomy in the context of high inhibition of relatedness between the parents and adolescents will be associated
with the worst outcomes for adolescent sexual behavior: early onset of sexual intercourse and unsafe sexual practices. These adolescents were predicted to be seeking peer substitutes for intimacy because of the coercive, controlling and negative family relationships these adolescents have with their parents.

3c) These associations are predicted for both the cross-sectional analyses at wave 1 and the longitudinal analyses predicting change in sexual activity at wave 2 from wave 1 parental behaviors of autonomy/relatedness (Refer to Figure 1).

4) Based on past research (e.g., Boykin & Allen, 1998), it was expected that the meaning of parental behaviors that display autonomy or undermine adolescent autonomy will vary according to the level of risk present in the family’s environment. It was expected that parental behaviors which undermine adolescents’ autonomy within the context of a close, supportive relationship will be associated with safer and more effective management of sexual behavior under high risk conditions cross-sectionally and longitudinally.

5) As past research has suggested, family processes may influence adolescents’ behaviors, but in an indirect way through characteristics of the individual. It was hypothesized that the cross-sectional and longitudinal association between parental displays of autonomy and relatedness and adolescents’ safer sexual behavior may be mediated through individual attributes of the adolescent, e.g., ego development and self efficacy (see
Figure 1), both of which have been linked to adolescents’ effective management of sexual behavior. Adolescents whose parents model and encourage open and assertive discussion of reasons for disagreements within the context of a close parent-adolescent relationship may develop a sense of themselves as competent in interpersonal relationships and interactions, similar to securely attached adolescents who may be more internally regulated and more capable of making autonomous decisions about their behavior than are insecure adolescents who may be more influenced by external controls (Moore, 1997).

The primary aim of this study was to conduct the analyses as outlined above using observational indices of parental displays of autonomy and relatedness or inhibition of adolescent autonomy and relatedness. To validate and extend the observational findings, it was planned that similar analyses would be conducted using parental self-report of parenting behaviors which undermine or promote autonomy and relatedness with adolescents. Parents responded to the Children’s Report on Parent Behavior Inventory (CRPBI; Schaefer, 1965; Schludermann & Schludermann, 1970) which contains scales measuring psychological control vs. psychological autonomy and parental acceptance vs. rejection that were expected to parallel constructs from the observational data. Parental
reports were used to reduce the likelihood that shared method variance would account for any significant results. Aspects of the parent-adolescent relationship, such as parental acceptance (relatedness promoting vs. relatedness) and psychological control (autonomy promoting vs. inhibiting) have been associated with adolescent sexual behavior and management in this sample (Moore, 1997; O’Beirne, 1998). Previous research had been conducted with mothers only because of the limited sample size of fathers (Moore, 1997), but additional data have been collected since that study was conducted. Mothers’ perception of themselves as accepting was associated with adolescents’ delay of sexual intercourse. The relationship between parental behaviors and the quality of the relationship and adolescent sexual behavior were moderated by gender. Boys who perceived their mothers as more accepting were more likely to delay sexual activity. In contrast, boys were more likely to have been sexually active if they perceived their mothers as psychological controlling (autonomy inhibiting). Neither of these associations were apparent for girls. Girls, on the other hand, were more likely to use contraception frequently if they perceived their mothers as less psychologically controlling (autonomy inhibiting). In addition, at the trend level, boys engaged in more frequent sexual activity the more accepting and less psychologically controlling their fathers were. The more psychologically controlling fathers were in their relationship with girls, the more sexual partners girls had and the earlier girls initiated sexual activity (at the trend level). (Moore, 1997). Because of previous research examining the relation between parental behaviors and adolescent sexual behavior, the main focus of the analyses utilizing the parental self reports was to conduct parallel analyses examining the moderating effects of environmental risk and the mediating effects of adolescent
ego development and self efficacy for the association between parental behaviors displaying
and inhibiting adolescent autonomy and relatedness and management of sexual behavior both
cross-sectionally and longitudinally.

Past research (Moore, 1997; O’Beirne, 1998; O’Beirne, et al., 1998) utilizing data
from this sample have reported few significant gender or ethnicity main or moderating effects in
the indices of sexual behavior investigated here. This is in contrast to previous research, but
may be in part due to the relatively higher risk present in this sample. Because previous
research has found gender and minority status to be important correlates of adolescent sexual
behavior, analyses examined the moderating effect of gender and minority status for parenting
variables on adolescent sexual behavior. Additionally, the literature discusses the differential
effects of mothers and fathers on their sons’ and daughters’ sexual behavior. Analyses
examining the effects of gender of the adolescent and gender of the parent were conducted, but
because of the small sample of observational data from fathers and their adolescents (n=43),
these analyses were exploratory.

Methods

Participants

Data for the analyses in this study were collected as part of the Virginia Study of Teens
and Families (VSTF), a longitudinal study of family functioning and adolescent socioemotional
development. Data were collected from 150 adolescents and their families at two time points.
At wave 1, observational data was collected from 132 adolescents and their mothers and 43
adolescents and their fathers, yielding a total of 137 adolescents and their parents for whom we
have observational data. This is the sample used in the current study. The first wave of data was collected when the adolescents were approximately 16 years old (ninth & tenth graders), and the second wave of data collection occurred two years later. Adolescents were slightly older than a normative sample because of the inclusion of grade retention as a selection criterion.

Families were recruited through two local, public high schools in a geographic area that includes both rural and city populations. Parental educational level ranged from having an eighth grade education or less to having a graduate degree; the median educational level was having some college or vocational training beyond high school. Adolescents were eligible for inclusion in VSTF based upon the presence of at least one of a range of possible risk factors, including failing grades, grade retention, multiple absences, and/or suspensions. This sampling strategy was designed to capture a sample representative of the population of high school students termed “the forgotten half.” These students are deemed to be at increased risk for not continuing into higher education (W. T. Grant Commission, 1988). Though the sample was collected to target an at-risk sample of adolescents, the current sample contains adolescents who represent a broad range of functioning, some of whom were experiencing serious difficulties, whereas others were performing adequately with only occasional, minor problems. Two years later, approximately 134 adolescents and their parents returned for the second wave of data collection, including observational information. Demographic information for the sample at both waves of data collection is presented in Table 1.
### Summary of Means (SD) of VSTF Demographic Data at Waves 1 and 2

<table>
<thead>
<tr>
<th></th>
<th>Wave 1 (N=137)</th>
<th>Wave 2 (N=134)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adolescent Age</strong></td>
<td>15.88 (.79)</td>
<td>18.12 (.98)</td>
</tr>
<tr>
<td><strong>Adolescent Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>73 boys (53%)</td>
<td>71 boys (53%)</td>
</tr>
<tr>
<td>Girls</td>
<td>64 girls (47%)</td>
<td>63 girls (47%)</td>
</tr>
<tr>
<td><strong>Minority Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>84 white (61%)</td>
<td>82 white (61%)</td>
</tr>
<tr>
<td>Minority</td>
<td>53 minority (39%)</td>
<td>52 minority (39%)</td>
</tr>
<tr>
<td><strong>Median Family Income</strong></td>
<td>$25,000</td>
<td>$35,000</td>
</tr>
<tr>
<td><strong>Family Type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bio. parents</td>
<td>40 bio. parents (29%)</td>
<td>36 bio. parents (27%)</td>
</tr>
<tr>
<td>Single parent</td>
<td>70 single parent (51%)</td>
<td>71 single parent (53%)</td>
</tr>
<tr>
<td>Step-parent</td>
<td>27 step-parent (20%)</td>
<td>27 step-parent (20%)</td>
</tr>
</tbody>
</table>

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Note: bio. parents = living with both biological parents.

To examine the moderating effect of environmental risk, the sample was also subdivided into low and high risk groups (Boykin & Allen, 1998). Two variables were used to determine level of environmental risk: location of residence [urban (within the city boundaries) vs. rural (outside the city and in the surrounding county)] and family income. These factors function as useful indicators of risk for behaviors such as criminal and delinquent behavior. The rate of index offenses and drug-related arrests in the city were approximately 2-3 times the rate in the rural areas of the surrounding county (Virginia Department of State Police, 1995). The population density in the city was also significantly greater than that in the city (Slater & Hall, 1996). This suggests that adolescents living in the city would have easier access to peers outside of school without parental assistance. If parents are less involved, there may be a
decrease in parental monitoring and control of adolescents’ behaviors, which may increase the exposure of adolescents within the city to risky, delinquent activities either as perpetrators or as victims compared to their counterparts in the rural county (Boykin & Allen, 1998).

Family income was also incorporated in the index of risk because living in poverty in cities has also been related to being exposed to higher crime rates (Krivo & Peterson, 1996). Because of the multiplicative effects of risk factors (Brooks-Gunn, Klebanov, Liaw, & Duncan, 1995), families were classified as high risk (n=44; 32%) if they lived within the city boundaries and if their family income level placed them at or below 200% of the official Federal poverty line. Families were classified as low risk (n=93) if they had neither of the two index factors or only one in isolation (Boykin & Allen, 1998).

While adolescents’ age and gender composition did not differ across the low and high environmental risk groups, family incomes and parental education levels were higher in the low risk group than in the high risk group. In addition, relatively more of the adolescents in high risk contexts lived in single parent families than in other family types. There was also a significant association between minority status and neighborhood risk ($\chi^2 = 36.04, p = .001$). Although black adolescents were roughly evenly distributed between the low and high risk neighborhood groups, white adolescents tended to live in less risky neighborhoods.

**Procedure**

As mentioned earlier, adolescents and their families were initially recruited through two local high schools. If they agreed to participate, the parent(s) and their sixteen-year-old came
to the University of Virginia for two-three hour sessions. Approximately half of the families contacted participated in the study. Active consent was obtained from each participant at each visit. Confidentiality was guaranteed both in the introduction to the study and throughout the interviews. Information was collected in separate rooms by different interviewers from each parent, including biological parents and stepparents, and each adolescent. During the sessions, participants were asked to complete a number of questionnaires assessing parenting behaviors, quality of the parent-adolescent relationship, and adolescent functioning. Adolescents also reported on their drug and alcohol use, sexual activity and delinquent acts. Adolescents and adults have been found to provide reliable information to interviews and questionnaires (Farrington, 1973; James, Bignell, & Gillies, 1991). Great care was taken to reassure adolescents that no one, including parents, schools, or the courts, would be given any information about their responses to the surveys. Adolescents were also assured that their names would not appear on any questionnaires, and that they were free to skip any question which they did not feel comfortable answering. Videotaped interactions of each parent-adolescent dyad discussing a disagreement were obtained at the end of the second visit when adolescents were aged 16. Two years later, parents and adolescents were contacted and asked to complete a similar battery of questionnaires. Adolescents again reported on their sexual behavior and experiences.

Measures

Copies of the measures used in the current study are attached in Appendix A.

Adolescent Sexual Behavior: At the initial wave of data collection, adolescents
responded to a brief interview about their sexual experiences. Interviews were conducted near the end of the session to maximize comfort and rapport between the interviewer and the adolescent. The majority of research on adolescent sexual behavior have relied on adolescent self-report because of the nature of the information, although this can introduce bias. Although the validity and reliability of self-reported sexual behaviors are rarely measured, most researchers in this field believe these items, when properly constructed, possess face validity and are reasonably reliable (Kirby, 1997). Test-retest reliability for responses to “ever had intercourse” questions have been demonstrated to be .94 (Moberg & Piper, 1990; Rotheram-Borus, Koopman, Haigners, & Davies, 1991). Additionally, data from in-person interviews and anonymous surveys tend to be consistent (Kirby, 1997).

Teens reported whether they had ever had sexual intercourse, and if so, at what age they first had sex. Sexually active adolescents were asked how frequently they had engaged in sex in the past six months (from not at all to more than once a day), as well as the number of partners they had had in the past six months (from none to six or more). Sexually active adolescents were also asked the type and frequency of contraception used in the past six months (never to always), and whether they had ever discussed contraception (yes/no) with their partner. When adolescents returned at age 18, they were administered a survey that asked questions about sexual behavior identical to the ones described above. Information about age at first sexual intercourse from both time points was used to form a single variable assessing age of onset of sexual experience. Age at first intercourse was recorded from information gathered during the first data collection. Data collected at the second time point was used only if the
initial information was missing. Two teens reported their first sexual experiences at ages 7 and 8; their data were excluded from survival analyses examining correlates of age of onset because of the concern that these sexual experiences were not consensual. These participants were included in other analyses if they reported recent (within the last six months) sexual activity. It was also possible for an adolescent who had reported becoming sexually active at age 10 or older to have reported no sexual activity within the past six months. Those teens were excluded from analyses focusing on the recently sexually active sample.

A composite variable assessing risk of pregnancy, used in previous research utilizing this data (O’Beirne, 1998), was calculated for all adolescents in the current sample. Adolescents who reported abstinence or no sexual activity within the last six months were assigned ‘0’ on the risk scale. This variable was computed based on information related to risky behavior associated with increased rates of pregnancy and exposure to STD’s: the method and regularity of contraceptive use (incorporating birth control failure rates estimated by Planned Parenthood for each method) and frequency of sex. For further information regarding the birth control failure rates and the algorithm used to calculate risk of pregnancy refer to Appendix B. Because the resulting composite was positively skewed, the variable was logarithmically transformed.

Autonomy and Relatedness Coding System: (Allen, et al., 1999). This observational coding system was based on a system developed by Grotevant & Cooper (1985). The Autonomy and Relatedness coding system was used to code parental behaviors during a 10-minute dyadic revealed differences task between each parent and their adolescent. At the first
assessments, mothers or fathers and their 16-year-olds discussed a family topic about which they both disagreed. Typical topics included money, grades, household rules, friends, and siblings. Other topics included communication, alcohol and drugs, dating and plans for the future. These interactions were videotaped and then transcribed. Coders rated the interaction using both the videotapes and transcripts. All tapes were coded by at least two trained coders. All coders underwent intensive training during which practice tapes were coded and discussed. Past research has shown the system to be reliable (Allen, Hauser, Bell, et al., 1994). During observational data coding, a “reliability” tape was scored and discussed at bimonthly meetings to prevent coder drift. Intra-class correlations for mothers’ and fathers’ behaviors range from .80 to .89 for fathers’ displays of positive autonomy and relatedness and fathers’ displays of negative relatedness, respectively.

The scoring of the Autonomy and Relatedness coding system considers both the frequency and intensity/salience of statements within each category. Concrete behavioral guidelines are utilized to code each talk-turn on 9 different codes that are summed and grouped on a priori grounds into four scales: 1) behaviors that display autonomy, 2) behaviors that inhibit autonomy, 3) behaviors that promote relatedness and 4) behaviors that inhibit relatedness. Three of the categories are global codes that account for the quality of the overall 10-minute interaction. The global codes include the two codes for display of positive autonomy, the expression and discussion of reasons regarding the disagreement and confidence in stating one’s position, as well as the level of engagement and empathy displayed during the interaction, which loads on the promotion of relatedness scale. Behaviors that undermine
adolescent autonomy include statements which: 1) recant one’s position without appearing to have been persuaded by another’s reasoning, 2) pressure another person to agree (without using rational arguments), and 3) overpersonalize the agreement to focus on characteristics of the person rather than the reasons for the disagreement. Behaviors that promote relatedness include engagement and empathy and statements which reflect support and validation of another or his/her position. Finally, behaviors that inhibit relatedness include codes for interrupting and ignoring the adolescent, as well as for critical and devaluing statements.

Table 2 presents a summary of the behaviors which comprise the four different scales measured by the Autonomy and Relatedness coding system.
### Table 2

**Scales and Sample Behaviors from the Autonomy and Relatedness Coding System**

<table>
<thead>
<tr>
<th>Scale</th>
<th>Behavior</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displaying Autonomy</td>
<td>States Reasons Clearly</td>
<td>“I don’t want you staying out late on a school night because it’s dangerous coming home late at night by yourself and you’ll have trouble waking up the next morning for school.”</td>
</tr>
<tr>
<td></td>
<td>For Disagreeing (Global Code)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Confidence in Stating Opinions (Said with no signs of uncertainty or hesitation. (Global Code)</td>
<td></td>
</tr>
<tr>
<td>Undermining of Adolescent Autonomy</td>
<td>Recant Position</td>
<td>Mother: You can always find someone else to blame for your mistakes. Teen: It really wasn’t my fault. Mother: Whatever you say, Amy. (Mother rolls eyes and clearly hasn’t changed her mind).</td>
</tr>
<tr>
<td></td>
<td>Overpersonalizing Disagreement</td>
<td>“How can I trust you? You never show any responsibility, Mark.”</td>
</tr>
<tr>
<td></td>
<td>Pressuring Teen to Agree</td>
<td>“Oh, come on, Kim, you can’t really mean that.”</td>
</tr>
<tr>
<td>Promoting Adolescent Relatedness to Parent</td>
<td>Validates/Agrees</td>
<td>“I can understand why you feel that way, Chris.”</td>
</tr>
<tr>
<td></td>
<td>Engaged Interaction (Global Code)</td>
<td>Displays empathy and effort to connect with teen throughout discussion.</td>
</tr>
</tbody>
</table>
Undermining Adolescent Relatedness to Parent

Distracts/Ignores/Cuts Off

“That’s it. I don’t want to discuss this with you anymore.”

Table 2 (cont.)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Behavior</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undermining to Adolescent Relatedness to Parent (cont.)</td>
<td>Hostile/Devaluing Statements</td>
<td>“You must be really stupid to think that.”</td>
</tr>
</tbody>
</table>

*Examples for table were taken from Allen et al., (1999).

The global codes are rated on a scale of 0-4, with half-point intervals and concrete behavioral descriptions for each full point on the scale. Scores for each of the speeches within the other six codes are combined to yield overall scores for their codes, again on a scale of 0 to 4. Scores were then summed within each scale to yield the four overall scale scores. In addition, the mean of the displaying autonomy and the promoting relatedness scores were taken to compute a positive autonomous-relatedness scale to use in the analyses. Prior research has demonstrated that observed autonomy and relatedness behaviors have been associated with a wide range of adolescent adjustment, including ego development, self esteem (Allen, Hauser, Bell, et al., 1994; Allen & Hauser, 1996), internalizing and externalizing behaviors (Allen, Hauser, Eickholt, et al., 1994) attachment representations, educational achievement and social impairment (Allen, Hauser, O’Connor, Bell & Eickholt, 1996).

Children’s Report on Parent Behavior Inventory (CRPBI): Parents were asked to complete the CRPBI (Schaefer, 1965; Steinberg, Elmen, & Mounts, 1989), a 30-item measure about their parenting style, in the way they thought their 16-year-old adolescent would respond. In response to the descriptive phrases, parents indicated whether that characteristic is “not like,” “somewhat like,” or “a lot like” them. One hundred twenty seven mothers and 48 fathers
Adolescent Sexual Behavior

completed the CRPBI at the first wave of data collection. Responses yield empirically-derived scores for three subscales, two of which were used in this study: psychological control vs. psychological autonomy and acceptance vs. rejection (Schludermann & Schludermann, 1970). These subscales are thought to parallel the observational scales: demonstration vs. inhibition of autonomy and promotion vs. inhibition of relatedness. Scores on each scale can range from 10-30. The psychological control vs. psychological autonomy subscale indicates the perceived degree to which the parent uses guilt, anxiety, love withdrawal or other psychological method to control the adolescent’s behavior and inhibit the adolescent’s autonomous development from the parent (Schludermann & Schludermann, 1970). An item example is “My mother is a person who...says if I really cared for her, I would not do things that cause her to worry.” Within this sample, internal consistency among items was good, $\alpha = .80$ for mothers’ reports and $\alpha = .79$ for fathers’ reports. Parental acceptance vs. rejection measures the quality of the parent-teen relationship, i.e. perceptions of the parent as affectionate, emotionally supportive, and egalitarian, in contrast to perceptions that the parent ignores, neglects or rejects the adolescent (Schludermann & Schludermann, 1970). An item from this scale is: “My father is a person who...enjoys doing things with me.” For the acceptance scale, internal consistency of the items was high, $\alpha = .89$ for mothers’ reports and $\alpha = .86$ for fathers’ reports. The CRPBI scales have been found to possess good test-retest reliability, as well as to be related significantly to various aspects of family functioning and adolescent outcomes (Collins, 1990; Schaefer, 1965; Schludermann & Schludermann, 1970; Steinberg, Dornbusch, & Brown, 1992). Low levels of psychological control have been related to high levels of family satisfaction (Schludermann &
Ego Development: At the first assessment, adolescents completed the Sentence Completion Task (SCT; Loevinger & Wessler, 1970), a projective measure designed to assess an individual’s stage of ego development by allowing people to project their organizing frames of reference of experience (Loevinger & Wessler, 1970). The test consists of 36 unfinished sentence stems, in which the content varied slightly by gender. Trained raters assigned stem responses to one of nine mutually exclusive levels of ego development, by matching responses to categories provided by the coding manuals. Separate coding manuals were used to code the male and female protocols. Stage of ego development was computed by summing the ratings to all 36 stems. Each level addresses characteristic modes of impulse control, interpersonal style, and conscious preoccupation (Kroger, 1996). Prior research conducted with the VSTF sample using the SCT found Spearman-Brown correlations which indicated high reliability among raters ( \( r = .98 \)). Internal consistency was also demonstrated to be high: \( \alpha = .90 \) for females and \( \alpha = .85 \) for males (Tate, 1998). Construct validity of the SCT has been demonstrated to be good. Scores from the SCT have been related to measures of moral development (Liberman, Gaa, & Frankiewicz, 1983), impulsiveness (Kishton, Starett, & Lucas, 1984), violent behavior (Tate, 1998), and interpersonal and cognitive styles (Lorr & Manning, 1978). Discriminant validity has also been demonstrated from measures of intelligence and verbal fluency (Hauser, 1976).

Self Efficacy: Sixteen-year-old males and females were administered in interview format either the Adolescent Problem Solving Inventory for Boys (API; Freedman, Rosenthal,
Donohoe, Schlundt, & McFall, 1978) or the Problem Inventory for Adolescent Girls (PIAG; Gaffney & McFall, 1981), respectively. Highly similar items were selected from each measure to maximize comparability across the two forms (Allen, Leadbeater, et al., 1990; Allen, Leadbeater, & Aber, 1994). The API and PIAG have been used to assess adolescents’ social problem solving competence and to probe adolescents’ expectations for performance of competent behaviors. Audiotaped hypothetical social situations were played for the adolescents which described conflicts with parents, peers and teachers. Adolescents were asked to provide their most likely responses to these situations. After adolescents reported their likely response/behavior to these nine situations, adolescents listened to the dilemmas a second time accompanied by a competent response as derived from the API and PIAG coding manuals and described to the youths as “another teenager’s response”. Self efficacy expectations (Allen, Leadbeater, et al., 1990) were assessed by the question, “Do you think you could [perform the specified competent response] if you tried to?” Adolescents rated their response on a 10-point scale ranging from “Definitely No” to “Definitely Yes” for each behavior. Previous research has found the API and PIAG to be reliable and valid (Freedman, et al., 1978; Gaffney & McFall, 1981; Hunter & Kelley, 1986; Leadbeater, Hellner, Allen, & Aber, 1989; Ward & McFall, 1986). For this sample, internal consistency of the items was $\alpha = .79$ for males and $\alpha = .59$ for females. Efficacy expectations have been found to be predictive of adolescent problem behaviors (Allen, Leadbeater et al., 1994; Kuperminc, 1994).

**Statistical Methods**

Descriptive information is presented on each variable utilized in subsequent analyses.
Preliminary analyses were conducted using chi square and ANOVA tests to examine group differences in adolescent sexual behavior by gender, minority status, and environmental risk. Additionally, correlational analyses were presented to examine basic relationships among the predictor and mediator variables and among the sexual behavior outcome variables.

To test the specific hypotheses outlined in Figure 1, a combination of hierarchical multiple regression analyses, logistic regression analyses, and survival analyses were employed. Hierarchical multiple regressions were used to test the cross-sectional and longitudinal associations between observed and self-reported parental autonomy/relatedness behaviors and the composite of risky sexual behavior. Analyses involving the unprotected sexual behavior composite as the dependent variable were conducted with all the adolescents in the sample, including adolescents who utilized abstinence as a method of preventing pregnancy, and then with the sexually active sample, excluding adolescents who had not engaged in sexual intercourse in the previous six months. In the longitudinal analyses, adolescents’ sexual behavior at age 16 was entered to examine if parents’ autonomy/relatedness behaviors with their 16-year-olds were associated with a change in use of contraception to prevent pregnancy from age 16 to age 18 and to provide a more rigorous test of the longitudinal association. Hierarchical regression analyses were also utilized to test the prediction of adolescent sexual partners at age 16 and at age 18 from parental behaviors, while controlling for gender and minority status. Because the information given was the number of sexual partners within the last six months, number of sexual partners at age 16 was not entered into the longitudinal models.
In models for all hypotheses, except hypothesis 5 which tested for the mediating effects of the individual adolescent attributes of ego development and self efficacy on sexual decision-making, gender of adolescent and minority status (or environmental risk for hypothesis 4) were entered first, followed by the parenting variables (observed or self report), and the interaction terms of interest. The hierarchical regression procedure allows for the examination of the statistical significance of the contribution each step makes in accounting for additional variance in the outcome variable beyond what has been accounted for by previous blocks. Preliminary analyses were used to determine the best fitting model and eliminated unnecessary interactions that were not relevant to the main question of interest.

Hierarchical logistic regression analyses were used to predict the likelihood that adolescents had discussed protection with their sexual partners, following the same format as used in the hierarchical regression analyses and including discussion of protection at age 16 in the longitudinal model. In logistic regressions, the chi-square statistic is used to ascertain the model’s “goodness of fit” to the data. The chi-square statistic is computed based on the difference between the fit of the model in which only the intercept is entered compared with the model containing the predictor variables, or covariates.

Survival analyses were used to examine whether parental relatedness interacted with parental attempts to undermine adolescent autonomy to affect the onset of sexual intercourse. In this case, survival analyses are preferable to logistic regressions because survival analyses allow for the use of survival time information, i.e., age at onset of coitus to include censored data, i.e., age when information was “lost” because participant withdrew or the study ended while the
adolescent was still abstinent. Logistic regression models ignore survival times and censored data to consider only a dichotomous outcome (Kleinbaum, 1996).

To test the predictions that adolescent ego development and self efficacy are mediators of parental influence on adolescent sexual behavior, Baron and Kenny’s (1986) method of testing the linkages of the mediating model were employed. In order to establish a mediational process, certain conditions must be met and can be determined from three regression equations. Within the current model, parental autonomy and relatedness behaviors, either observed or self-reported, must significantly predict the mediator, in this case either adolescent ego development or self efficacy. Secondly, parental displays of autonomy/relatedness behaviors must be demonstrated to be associated with the dependent variable, management of sexual behavior (i.e. use of reliable contraception to prevent pregnancy, number of sexual partners, or discussion of protection with partner). Finally, adolescent ego development (or self efficacy) must be significantly associated with management of sexual behavior. If these three conditions are met in the predicted direction, a mediator effect is detected if the effect of parental behaviors on adolescent management of sexual behavior is significantly less or nonexistent in a fourth regression with the mediator entered, than it was as a sole predictor. A variable is a perfect mediator if the independent variable is shown to have no effect on the outcome variable when the mediator is entered in the model (Baron & Kenny, 1986).

Sample size fluctuated across analyses given missing data in certain measures. This was particularly the case when only sexually active adolescents were included in the analyses involving onset of coitus, number of sexual partners, discussion of protection, or use of
contraception to prevent pregnancy. Limited power was also especially apparent when fathers’
parenting behaviors were tested within a model, given the limited number of fathers who
participated in the observed interactions (n=43) or completed the CRPBI (n=48). Thus,
analyses will be performed separately for mothers’ and fathers’ behaviors and reports.

Results

Descriptive Statistics

Means, standard deviations, and ranges of the predictor variables from the first
assessment, including observed and self-reported parental behaviors that display or inhibit
adolescent autonomy and relatedness and adolescent attributes of ego development and self
efficacy, are presented in Table 3. Table 4 presents descriptive information of the adolescents’
sexual behavior assessed at approximately age 16 and then again at age 18. Of the full sample,
across both waves of data collection, 82.2% of the sample had engaged in sexual intercourse
on at least one occasion. The remaining 24 adolescents had not engaged in sexual activity either
before withdrawing from the study or before the study ended. By age 15, 58.1%, of the
adolescents, slightly more than half, reported engaging in sexual intercourse. By age 16,
approximately 74% of the adolescents (n=100) in this sample had experienced sexual
intercourse on at least one occasion. Finally, by age 18, 111 adolescents (83.3%) in this sample
reported at least one sexual experience. Average age at first coitus was 14 ½ years for those
who had had sex. The significant proportion of sexually active adolescents, as well as the early
age of first coitus, is to be expected based on the selection criteria for a sample of adolescents
at risk.
By age 18, roughly 24% of the sample reported either having been pregnant or getting their partners pregnant; 10% of the sample reported having given birth to a child. Approximately 10% reported having had a sexually transmitted disease. Frequency information for certain sexual behavior outcomes are presented in Table 5.
Table 3

Means, Standard Deviations (SD), and Ranges of Wave 1 Predictor Variables: Parental Autonomy and Relatedness Behaviors and Adolescent Ego Development and Self-Efficacy

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Observed Autonomy/Relatedness Behaviors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mothers’ Behaviors (n = 132):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promote Adolescent Autonomy</td>
<td>2.68</td>
<td>.71</td>
<td>0.5-4.0</td>
</tr>
<tr>
<td>Promote Adolescent Relatedness</td>
<td>2.02</td>
<td>.72</td>
<td>0.13-3.75</td>
</tr>
<tr>
<td>Promote Adolescent Aut. Relatedness</td>
<td>2.35</td>
<td>.59</td>
<td>0.44-3.69</td>
</tr>
<tr>
<td>Undermine Adolescent Autonomy</td>
<td>0.88</td>
<td>.49</td>
<td>0-2.17</td>
</tr>
<tr>
<td>Undermine Adolescent Relatedness</td>
<td>0.95</td>
<td>.62</td>
<td>0-3.13</td>
</tr>
<tr>
<td>Fathers’ Behaviors (n = 43):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promote Adolescent Autonomy</td>
<td>2.74</td>
<td>.78</td>
<td>0.75-3.88</td>
</tr>
<tr>
<td>Promote Adolescent Relatedness</td>
<td>1.82</td>
<td>.73</td>
<td>0.25-3.75</td>
</tr>
<tr>
<td>Promote Adolescent Aut. Relatedness</td>
<td>2.28</td>
<td>.62</td>
<td>0.56-3.38</td>
</tr>
<tr>
<td>Undermine Adolescent Autonomy</td>
<td>0.66</td>
<td>.50</td>
<td>0-2.33</td>
</tr>
<tr>
<td>Undermine Adolescent Relatedness</td>
<td>0.78</td>
<td>.66</td>
<td>0-2.5</td>
</tr>
<tr>
<td><strong>Child Report of Parent Behavior Inventory (CRPBI)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Reports (n = 127):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptance by Mother</td>
<td>22.80</td>
<td>4.55</td>
<td>11-30</td>
</tr>
<tr>
<td>Psychological Control by Mother</td>
<td>17.42</td>
<td>4.25</td>
<td>10-27</td>
</tr>
<tr>
<td>Paternal Reports (n = 48):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptance by Father</td>
<td>20.71</td>
<td>3.74</td>
<td>11-29</td>
</tr>
<tr>
<td>Psychological Control by Father</td>
<td>16.51</td>
<td>4.13</td>
<td>10-26</td>
</tr>
<tr>
<td><strong>Sentence Completion Task (SCT)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescent Ego Development (n = 135)</td>
<td>0.03</td>
<td>1.01</td>
<td>-2.77-3.10</td>
</tr>
<tr>
<td><strong>Adolescent Problem Solving Inventory for Boys (API) &amp; Problem Inventory for Adolescent Girls (PIAG)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescent Self-Efficacy (n = 136)</td>
<td>7.68</td>
<td>1.53</td>
<td>1.78-10</td>
</tr>
</tbody>
</table>

Note: Aut. = Autonomous.
Table 4

Means, Standard Deviations (SD), and Ranges of Sexual Behavior Outcomes at Age 16 and Age 18

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sexually Active and Nonactive Sample</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever had sex*</td>
<td>135</td>
<td>82.2 %</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Age at first sex* (years)</td>
<td>111</td>
<td>14.53</td>
<td>1.73</td>
<td>10-20</td>
</tr>
<tr>
<td>Unprotected Sex Composite (Age 16)</td>
<td>133</td>
<td>0.29</td>
<td>.60</td>
<td>0-3.50</td>
</tr>
<tr>
<td>Unprotected Sex Composite (Age 18)</td>
<td>125</td>
<td>0.99</td>
<td>1.20</td>
<td>0-4.76</td>
</tr>
<tr>
<td><strong>Sexually Active Sample, Age 16</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had sex by age 15</td>
<td>136</td>
<td>58.1%</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Had sex by age 16</td>
<td>136</td>
<td>73.5%</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Discuss protection, recent partner**</td>
<td>75</td>
<td>74.7 %</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Number of sex partners (last 6 mo.)**</td>
<td>80</td>
<td>2.13</td>
<td>1.27</td>
<td>1-7</td>
</tr>
<tr>
<td>Freq. of intercourse (last 6 mo.)**</td>
<td>79</td>
<td>2.77</td>
<td>1.72</td>
<td>1-8</td>
</tr>
<tr>
<td>Freq of protection use (last 6 mo.)**</td>
<td>57</td>
<td>4.68</td>
<td>.83</td>
<td>1-5</td>
</tr>
<tr>
<td>Ever pregnant/caused pregnancy</td>
<td>134</td>
<td>4.5 %</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Ever gave birth/partner gave birth</td>
<td>60</td>
<td>1.7 %</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Ever had STD</td>
<td>134</td>
<td>3.7</td>
<td></td>
<td>0-1</td>
</tr>
<tr>
<td>Unprotected Sex Composite**</td>
<td>56</td>
<td>.68</td>
<td>.76</td>
<td>.07-3.50</td>
</tr>
<tr>
<td><strong>Sexually Active Sample, Age 18</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had sex by age 18</td>
<td>123</td>
<td>90.2 %</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Discuss protection, recent partner**</td>
<td>91</td>
<td>69.2 %</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Number of sex partners (last 6 mo.)**</td>
<td>105</td>
<td>1.45</td>
<td>1.20</td>
<td>1-7</td>
</tr>
<tr>
<td>Freq. of intercourse (last 6 mo.)**</td>
<td>105</td>
<td>3.05</td>
<td>2.06</td>
<td>0-7</td>
</tr>
<tr>
<td>Freq. of protection use (last 6 mo.)**</td>
<td>89</td>
<td>3.04</td>
<td>1.39</td>
<td>0-4</td>
</tr>
<tr>
<td>Ever pregnant/caused pregnancy</td>
<td>105</td>
<td>23.8 %</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Age at 1st pregnancy (self or partner)</td>
<td>25</td>
<td>16.68</td>
<td>1.57</td>
<td>14-19</td>
</tr>
<tr>
<td>Ever gave birth/partner gave birth</td>
<td>79</td>
<td>10.1 %</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Ever had STD</td>
<td>105</td>
<td>10.5</td>
<td>0-1</td>
<td></td>
</tr>
<tr>
<td>Unprotected Sex Composite**</td>
<td>88</td>
<td>1.41</td>
<td>1.21</td>
<td>.07-4.76</td>
</tr>
</tbody>
</table>

Note: * Information collapsed across both waves of data collection; **Sexually active adolescents only; Freq.=Frequency; mo.=months.
Table 5

Frequencies of Sexual Outcomes for Sexually Active Adolescents Assessed at Age 16 and 18

<table>
<thead>
<tr>
<th>Variable</th>
<th>% (Age 16)</th>
<th>% (Age 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often used protection in the last six months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>1.8</td>
<td>11.2</td>
</tr>
<tr>
<td>Once or twice</td>
<td>3.5</td>
<td>6.7</td>
</tr>
<tr>
<td>Occasionally</td>
<td>1.8</td>
<td>5.6</td>
</tr>
<tr>
<td>Frequently</td>
<td>10.5</td>
<td>19.1</td>
</tr>
<tr>
<td>Always</td>
<td>82.5</td>
<td>57.3</td>
</tr>
<tr>
<td>How many sexual partners in the last 6 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>28.8</td>
<td>12.4</td>
</tr>
<tr>
<td>One person</td>
<td>51.3</td>
<td>55.2</td>
</tr>
<tr>
<td>Two people</td>
<td>11.3</td>
<td>20.0</td>
</tr>
<tr>
<td>Three people</td>
<td>3.8</td>
<td>6.7</td>
</tr>
<tr>
<td>Four people</td>
<td>1.3</td>
<td>1.9</td>
</tr>
<tr>
<td>Five people</td>
<td>0.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Six or more people</td>
<td>3.8</td>
<td>2.9</td>
</tr>
<tr>
<td>How often have intercourse in the last 6 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all</td>
<td>29.1</td>
<td>15.2</td>
</tr>
<tr>
<td>About once or twice</td>
<td>30.4</td>
<td>17.1</td>
</tr>
<tr>
<td>About once a month</td>
<td>5.1</td>
<td>5.7</td>
</tr>
<tr>
<td>About 1x every 2-3 weeks</td>
<td>16.5</td>
<td>17.1</td>
</tr>
<tr>
<td>About 1x/week</td>
<td>8.9</td>
<td>9.5</td>
</tr>
<tr>
<td>About 2-3 x/week</td>
<td>8.9</td>
<td>27.6</td>
</tr>
<tr>
<td>About 1x/day</td>
<td>1.3</td>
<td>4.8</td>
</tr>
<tr>
<td>More than 1x a day</td>
<td>0.0</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Note: Due to the effect of rounding, percentages will not always equal 100%.

The majority (82.5%) of younger adolescents reported “always” using some type of protection during intercourse, in contrast to only 57% of 18-year-old adolescents who reported “always” using contraception. The most frequent response for number of sexual partners was “one person” (see Table 5). Most 16 year-olds reported having sex about once or twice a month, in contrast to most 18 year-olds (27.6%) reported having sex about 2-3x/week.
Chi-square and t-test analyses were conducted to see if there were differences in the sexual outcome variables by adolescents’ gender, minority status or level of risk in their neighborhoods. There were no gender, minority status or environmental risk differences for discussing protection with most recent partner at age 16 or age 18 or for reporting onset of sexual intercourse by age 18. Although there were no gender or environmental risk effects, there was a significant minority status effect for having had sex by age 16 \( \chi^2 (1) = 4.02, p = .045 \). White adolescents (20%) were more likely to be virgins than were black adolescents (7%) at age 16.

Table 6 presents results of t-test analyses investigating gender, minority status, and environmental risk effects for the continuous sexual outcome variables. There were few minority status or environmental risk effects on adolescents’ sexual behavior (see Table 6). Black adolescents reported engaging in sex about a year earlier than did white adolescents (M=13.98 years and M=14.91 years, respectively). Younger adolescents in high risk environments reported more sexual partners than did adolescents in lower risk environments. There was also a trend for both minority adolescents and adolescents in high risk environments to be engaging in more unprotected sexual activity at age 16. Older adolescents in low risk environments reported engaging in more frequent sexual activity than teens in higher risk neighborhoods. There were a number of gender differences in sexual behavior. Girls were more likely to be engaging in more frequent, unprotected sexual behavior than were boys, but they also reported fewer sexual partners by the time they were 18.
Table 6

Means for Sexual Behavior Outcomes by Gender, Minority Status and Environmental Risk

<table>
<thead>
<tr>
<th>Variables</th>
<th>Gender</th>
<th>Minorities</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at First Coitus (years)</td>
<td>14.36 14.71 14.91 13.98** 14.61 14.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual Partners, Age 16</td>
<td>2.07 2.18 1.95 2.32 1.86 2.57*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual Partners, Age 18</td>
<td>1.69 1.21* 1.31 1.68 1.49 1.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used Prot., Age 16</td>
<td>4.83 4.58 4.80 4.56 4.74 4.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used Prot., Age 18</td>
<td>3.35 2.80+ 3.07 3.00 2.97 3.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freq. of Sex, Age 16</td>
<td>2.39 3.18* 2.57 3.00 2.65 2.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freq. of Sex, Age 18</td>
<td>2.71 3.38+ 3.17 2.85 3.33 2.41*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unprotected Sex, Age 16</td>
<td>0.18 0.40* 0.21 0.40+ 0.23 0.41+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unprotected Sex, Age 18</td>
<td>0.75 1.25* 1.02 0.95 1.11 0.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unprotected Sex, SA 16</td>
<td>0.52 0.80 0.59 0.78 0.63 0.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unprotected Sex, SA 18</td>
<td>1.20 1.59 1.46 1.34 1.54 1.11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Prot. = Protection; Freq. = Frequency; SA = Sexually Active Sample; 16=Age 16; 18=Age 18; a = scale variable; b = composite variable. + p < .10, * p < .05.

Table 7 presents the intercorrelations among the predictor variables, including parental autonomy and relatedness behaviors (observed and self-reported) and adolescents’ ego development and self-efficacy. Displays of positive autonomy were significantly associated with displays of positive relatedness (see Table 7); likewise behaviors which undermined autonomy were significantly related to behaviors which undermined relatedness. Maternal displays of
positive autonomy and relatedness were also significantly correlated with paternal displays of autonomy and relatedness. There were no associations between maternal and paternal undermining of adolescent autonomy and relatedness (see Table 7). Contrary to expectation, observed autonomy and relatedness behaviors were not correlated with the psychological control or acceptance scales of the CRPBI.

Table 8 presents the intercorrelations of the sexual behaviors of interest in the current study. Correlations were in the expected direction. The composite of unprotected sexual behavior was correlated with frequency of intercourse and contraceptive use as expected based on its computation (refer to Appendix B). Earlier age at onset of sexual intercourse was correlated with more sexual partners at age 18 and riskier sexual behavior at age 16. Increases in number of sexual partners were associated with more frequent intercourse concurrently (see Table 8). Increased number of sexual partners at age 16 was also associated with more risky unprotected sexual behavior concurrently. There was little stability in most of the sexual behavior outcomes from age 16 to age 18 (e.g., number of sexual partners, use of contraception, and frequency of sex). There was moderate stability between the composites of unprotected sexual behavior.