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**MOTHER-ADOLESCENT SEXUALITY COMMUNICATION
IN A DEVELOPMENTAL CONTEXT**

A Thesis in

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by

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Abstract

Due to current rates of adolescent sexual activity, unintended pregnancy, and sexually transmitted infection including HIV/AIDS, much attention has recently focused on strategies for reducing the incidence of these occurrences. This focus has resulted in examinations of mother-adolescent sexuality communication as a predictor of sexual attitudes and behaviors. Much of the research in this area, however, has relied on single reporter self-reports of sexuality communication, and has assumed a direct association between communication and adolescent sexual attitudes and behaviors. The current study was designed to examine mother-adolescent sexuality communication, and to place the association between such communication and the sexual attitudes and behaviors of adolescents in the context of adolescent individuation and identity development. Mothers and their 15 to 18 year old male and female adolescents participated in the study. Each mother-adolescent dyad engaged in a videotaped conversation about sexuality, and completed questionnaires. Mothers who demonstrated more receptivity had adolescents who perceived less vulnerability to AIDS and more barriers to condom use. In addition, adolescents who rated their mothers as more responsive during previous sexuality conversations reported less perceived vulnerability to AIDS and fewer positive expectations for the protective abilities of condoms. Adolescents of mothers who displayed more composure were more connected to their mothers, and those who rated their mothers as more receptive were both more connected to their mothers and felt more independent from their control. Adolescent connectedness to mother and independence from mother did not, however, relate to adolescent sexual attitudes, precluding the hypothesized mediation. Adolescents whose mothers were more responsive reported identity commitments in more domains. In turn, adolescents with more identity commitments perceived less vulnerability to AIDS and had fewer positive expectations for condom use, but adolescent identity commitment did not act as a mediator. Although the associations between mothers' communication and adolescent sexual attitudes were in the direction opposite of that predicted, the relations that were found indicate that mothers' communication does relate to adolescent sexual attitudes. Further, both adolescents' reports and third-party evaluations of mothers' communication were important predictors of adolescent sexual attitudes and should be included in future research in this area.

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Chapter 1

INTRODUCTION

National surveys indicate that half of all high school students are sexually active (Centers for Disease Control [CDC], 2000b). In fact, the average age of first sexual intercourse has decreased over the years, with nearly one-third of adolescents currently having sex by the age of 15 (United States Department of Health and Human Services [USDHHS], 1998). This early initiation of sexual intercourse carries with it high levels of risk (Hogan & Kitagawa, 1985). Adolescents tend to have multiple sexual partners rather than long-term monogamous sexual relationships, tend to have high risk partners, and they tend to engage in unprotected sex (CDC, 2000a; 2000b), all of which increase their risk for unintended pregnancies and sexually transmitted infections, including HIV. Although contraception use in this age group has increased over the years, adolescents are less consistent users of contraception than are adults (CDC, 1997). For example, fewer than half of adolescent boys report using condoms every time they have sex (Moore, Driscoll, & Lindberg, 1995). In addition, condom use declines from 9th to 12th grade among both males and females (Moore et al.).

As a result of increased sexual activity and inconsistent contraception and condom use, adolescents are at risk for unintended pregnancies and sexually transmitted infections. Although adolescent pregnancy rates have been declining since their peak in 1991 (Child Trends, 1997), they are still higher than in the mid-1980s, and are higher in the U.S. than in other industrialized nations (Alan Guttmacher Institute, 1999). Sexually transmitted infection (STI) rates have also declined in the overall population, but the decline among adolescents has not been as great as among the larger population (USDHHS, 1996). For instance,

adolescent females have a higher rate of gonorrhea infection than do women in all other age groups (CDC, 2000a). Adolescents are also at relatively great risk for HIV infection. AIDS rates are declining in the general population, but there has not been a similar decline among adolescents (CDC, 2000b). In fact, by some estimates, 25% of all new HIV cases are diagnosed in adolescents (CDC, 2000b; Rosenberg, Biggar, & Goedert, 1994). Among female adolescents who are infected with HIV, nearly half contracted the disease through heterosexual intercourse (CDC, 2000b). The Centers for Disease Control and Prevention further speculates that, in the coming years, the proportion of HIV cases attributable to sexual contact among adolescents will increase (CDC, 2000b). Clearly, HIV transmission through heterosexual activity is a risk for adolescents.

These recent trends in adolescent sexual behaviors suggest that identifying predictors of safer sex practices is crucial to slowing the rate of STI infection, including HIV, and reducing the incidence of unintended pregnancy among adolescents. Parent-adolescent communication about sexuality is one strategy for understanding and predicting the risky attitudes and behaviors of adolescents. Recent years have seen an increased interest in this potential contributor to adolescent sexual attitudes and behaviors (e.g., Fisher, 1986; Lefkowitz, Sigman, & Au, 2000; Leland & Barth, 1993; Pick & Palos, 1995). The purpose of the present study was to expand on this body of research. Specifically, this study sought to examine mother-adolescent sexuality communication and its associations with adolescent sexual attitudes and behaviors, and its associations with adolescent developmental processes.

Mother-Adolescent Sexuality Communication

Although some research has identified associations between parent-adolescent sexuality communication and the sexual attitudes and behaviors of adolescents (Fisher, 1986, 1987; Leland & Barth, 1993), there are inconsistencies in the results that have emerged in this research. According to Jaccard and Dittus (1993), the mixed findings in the research are the result of an oversimplification of the communication process. Specifically, much of this research has relied on simple, self-report indices of the frequency of sexuality communication. In the earliest years of this research, parents and adolescents were typically asked, "Have you ever discussed sexuality with your adolescent/parent?" These early measures of parent-adolescent sexuality communication relied on single-item measures, asking them in a "yes/no" format or "how frequently" such conversations have occurred (e.g., Moore, Peterson, & Furstenberg, 1986). Researchers have more recently begun asking participants about the frequency of communication about several sexuality topics (DiIorio, Kelley, & Hockenberry-Eaton, 1999; Feldman & Rosenthal, 2000; Jaccard, Dittus, & Gordon, 1998), but most researchers then sum the responses to these questions to create an index of communication. This strategy limits the quantity of information available in the data (Lefkowitz, 2002). The researcher may know, for example, that six out of seven topics have been discussed, but because the responses have been summed to create an index of the frequency of communication, it is no longer possible to know which topics have been addressed.

In addition, these simple frequency counts of sexuality communication do not provide any information about the specific content of a sexuality-related discussion. For instance, a frequency measure may indicate that condoms have been discussed, but such a measure does

not provide any information about what was said about condoms. It may have been advice from parent to adolescent that condoms should always be used during sexual intercourse, or it may have involved warning the adolescent about the failure rates of condoms. By just asking if, or how frequently, condoms have been discussed, the researcher may fail to uncover important aspects of sexuality communication.

Although there are some inconsistencies in results and variations in measurement of parent-adolescent sexuality communication, previous research that has examined the complexities of sexuality communication has shown moderate associations between communication and sexual behaviors (Jaccard & Dittus, 1991; Jaccard, Dittus, & Gordon, 1996; Miller, Levin, Whitaker, & Xu, 1998; Whitaker & Miller, 2000). Some recent research has attempted to address specific aspects of parent-adolescent sexuality communication that may explain these associations (East, 1996; Karofksy, Zeng, & Kosorok, 2000; Leland & Barth, 1993; Pick & Palos, 1995). Specifically, a number of studies have examined the quality of communication. In general, this research has found that higher quality communication from parents is associated with fewer risky behaviors by their adolescents (East; Fisher, 1987; Leland & Barth; Pick & Palos). According to some, these associations are the result of parents' nondirect transmission of sexual attitudes, values, and beliefs (Dittus, Jaccard, & Gordon, 1999; Miller, 1998), which are the non-content, nonverbal parts of messages (Dittus et al.). Although the verbal messages in sexuality communication are clearly important, the nonverbal aspects of such communication are equally important. In fact, by some estimates, 67% of all information exchanged in interactions is nonverbal (Birdwhistell, 1955). These nonverbal aspects of communication include tone of voice, facial expressions, eye contact, touching, posture, and proximity. Because of the importance of

nonverbal communication, it will be important to examine nonverbal messages in addition to verbal messages when exploring the associations between mother-adolescent sexuality communication and adolescent sexual attitudes and behaviors. Doing so will permit an understanding of the relational communication—the messages that define the relationship (Burgoon, Buller, & Woodall, 1995)—that occurs between mothers and adolescents when discussing sexuality. The first aim of the current study was to understand the patterns of sexuality communication in mother-adolescent dyads. Although previous research has examined relational communication in romantic dyads (Bachman, & Zakahi, 2000; Teichner & Farnden-Lyster, 1997), little is known about relational communication in the parent-adolescent dyad (for an exception, see Siegel, Friedlander, & Hetherington, 1992) or in the context of sexuality communication. In addition, previous research has suggested that it is important to understand the relation between observed and self-reported sexuality communication (Jaccard et al., 1998; Lefkowitz, 2002; Lefkowitz, Boone, Sigman, & Au, 2002). Further, it may be important to understand this relation in regard to both the quality and the quantity of mother-adolescent sexuality communication. Accordingly, the present study sought to explore the patterns of observed sexuality communication in mother-adolescent dyads, and to understand these patterns along with self-reports of the quality and quantity of sexuality communication.

The second aim of the current study was to use observational methods to examine mothers' verbal and nonverbal messages during parent-adolescent sexuality communication, and the associations between those messages and the sexual attitudes and behaviors of middle adolescents. Previous research has demonstrated associations between mother-adolescent sexuality communication and the sexual attitudes and behaviors of adolescents

(Jaccard & Dittus, 1991; Jaccard et al., 1996; Miller, Levin et al., 1998; Whitaker & Miller, 2000). The present study sought to extend this research by examining observations of mother's verbal and nonverbal messages during sexuality conversations.

Although observations provide objective assessments of mothers' sexuality communication, it may be equally important to assess adolescents' perceptions of their mothers' sexuality communication. Much of the research in this area has relied on the reports of a single reporter to assess the communication (see for example, Fisher, 1986, 1987). The drawback to this approach is that the perceptions of one reporter provide only one perspective on the communication that occurs. As suggested by Lefkowitz (2002), it may be important to use multiple reporters of sexuality communication to assess differences by reporter, and to determine which reports are the best predictors of adolescents' sexual attitudes and behaviors. For instance, adolescents' perceptions of their mothers' sexuality communication may be different from observer evaluations, and may differentially predict the specific sexual attitudes and behaviors of adolescents. Accordingly, the third aim of the current study was to examine the adolescents' perceptions of their mothers' communication during previous sexuality conversations, and the association between these perceptions and adolescents' sexual attitudes and behaviors.

Most parent-adolescent sexuality communication research has addressed adolescent developmental status by including adolescent age as a covariate. In essence, age has been used as a proxy for developmental status. For the most part, other elements of development, including specific developmental tasks of adolescence, have been neglected. The fourth aim of the current study was to address the specific developmental task of adolescent individuation as it relates to the association between parent-adolescent sexuality

communication and middle adolescent sexual risk. Finally, the fifth aim of this study was to examine the developmental task of identity development as it relates to the association between parent-adolescent sexuality communication and middle adolescent sexual risk.

Mothers, and not fathers, were included in the current study for several reasons. First, previous research indicates that both male and female adolescents are closer to their mothers, and spend more time with their mothers than their fathers (Montemayor, 1982; Russell & Russell, 1987). They also perceive their mothers as more accepting of their opinions than their fathers (Noller & Callan, 1990), and report feeling more attached to their mothers than to their fathers (Pipp, Shaver, Jennings, Lamborn, & Fischer, 1985). In addition, male and female adolescents are more likely to choose to talk with their mothers about sex (Fisher, 1986), and think it is more important that they discuss sexuality issues with their mothers than with their fathers (Rosenthal & Feldman, 1999). Finally, mothers were included in the current study because mother-child interactions tend to be less influenced by the presence of an observer than are father-child interactions (Russell & Russell).

Adolescent Sexual Attitudes and Behaviors

Previous research suggests that certain sexual behaviors and certain sexual attitudes may place adolescents at greater risk than others (Basen-Engquist & Parcel, 1992; CDC, 2000a, 2000b; Hogan & Kitagawa, 1985; Levinson, Jaccard, & Beamer, 1995). Although much previous research has focused on the initiation of sexual intercourse among adolescents, it is important not to overlook other risky behaviors. A number of factors, in addition to initiation of sexual activity, can put adolescents at risk for unplanned pregnancies and STIs. First, and most obviously, is the use of condoms and contraception. Adolescents

who do not use condoms are at risk for STIs, and those who do not use any other contraception are also at risk for pregnancy. Second, adolescents' number of sexual partners can have implications for risk. For adolescents who may not be skilled at negotiating condom use, having multiple sexual partners increases their risk by increasing the odds of being exposed to a STI. Third, the relationship in which sexual activity occurs also has implications for risk. Adolescents who only have sexual relationships with partners they have dated for a long time are at less risk than those who have sex with partners they have just met. Those who have sex with casual acquaintances are at greater risk because both they themselves and their partners may have more sexual partners, and because the nature of the relationship may make it more difficult to negotiate condom use. Finally, the use of alcohol before or during sex increases adolescents' risk (Jemmott & Jemmott, 1993; MacNair-Semands & Simono, 1996). When adolescents have been drinking, their decision-making abilities may be impaired and they may be less able to negotiate condom use.

In addition to actual sexual behaviors, the attitudes that adolescents hold about sex and condoms may either increase their sexual risk or serve to protect them. A number of beliefs and attitudes have been identified by health behavior theories, such as the Health Belief Model (Strecher, Champion, & Rosenstock, 1997), as predictive of safer sex behaviors. First, as suggested by the Health Belief Model, individuals will only take actions to prevent negative health outcomes if they believe they are at risk (Strecher et al.). For example, adolescents will only use condoms if they believe they are vulnerable to STIs, including HIV. Similarly, they will only use contraception if they believe they could become pregnant. Thus, to the extent that beliefs of vulnerability are predictive of protective action, perceived vulnerability to negative outcomes such as AIDS is protective. Second, health

behavior theories suggest that individuals will only take protective actions if they perceive benefits and few barriers associated with the action (Strecher et al.). For instance, adolescents will only use condoms if they believe the condoms will not interfere with the sexual experience, if they believe they are capable of obtaining and using condoms, and if they do not anticipate being embarrassed or uncomfortable buying and using condoms. To the extent that these attitudes about condoms predict actual condom use, positive attitudes about condoms may serve a protective function. Finally, general sexual attitudes may also serve a protective function. Previous research indicates that late adolescents who hold liberal sexual attitudes tend to have more sexual partners, and may also be more likely to engage in riskier sexual behaviors (Basen-Engquist & Parcel, 1992; Levinson et al., 1995). Thus, more conservative sexual attitudes may be associated with less sexual risk.

Mother-Adolescent Sexuality Communication and Adolescent Sexual Attitudes and Behaviors

Previous research has demonstrated associations between mother-adolescent sexuality communication and adolescent sexual attitudes and behaviors (e.g., DiIorio et al., 1999; Fisher, 1986; 1987; Leland & Barth, 1993; Mueller & Powers, 1990). When mothers and adolescents discuss sexual topics frequently, the relation between their attitudes is stronger than when they have such discussions infrequently or not at all (Fisher, 1986, 1987). There is also evidence that adolescents who talk with their mothers about a wide variety of sexual topics have more conservative sexual attitudes than do adolescents who talk about fewer topics with their mothers (DiIorio et al.). A number of studies have found links between parent-adolescent communication and decreased adolescent sexual risk (Holtzman &

Robinson, 1995; Jaccard & Dittus, 1991; Karofksy et al., 2000; Miller, Forehand, & Kotchick, 1999; Miller, Levin et al., 1998; Pick & Palos, 1995; Rodgers, 1999). Specifically, frequency of communication has been associated with delayed initiation of sexual intercourse (Fisher, 1987; Pick & Palos), more consistent contraception and condom use (Fisher; 1987; Miller, Levin et al.), and fewer sexual partners (Leland & Barth). The underlying assumption in all of these studies has been that the communication process socializes adolescents regarding sexuality. In discussing sexual topics, it is presumed, mothers are able to convey their attitudes, beliefs, and expectations to their adolescents. Ecological models—though not specifically addressing adolescent sexual attitudes and behaviors—have provided justification for this assumption, including Bronfenbrenner’s Ecological Model (Bronfenbrenner & Morris, 1997) and Structural Ecosystems Theory posited by Szapocznik and Coatsworth (1999).

Bronfenbrenner’s Ecological Model (Bronfenbrenner & Morris, 1997) posits that individual development and behavior are influenced by proximal processes. Proximal processes include interactions that occur between individuals and their environment. In addition, these proximal processes occur within a number of different contexts. The most immediate context is the microsystem, which includes the parent-child relationship. According to the model, a primary mechanism of adolescent development is the parent-adolescent relationship and the interactions that occur within that relationship. The model suggests that parent-adolescent relationships and interactions are critical in adolescents’ development of sexual attitudes and behaviors. Drawing on the Ecological Model, Structural Ecosystems Theory (SET) provides a contextual framework for understanding the risk and protective factors that influence adolescent behaviors (Szapocznik & Coatsworth, 1999).

Originally developed to address risk and protective factors for drug and alcohol misuse, SET places the family at the center of adolescents' ecology. The theory also suggests that risk and protective factors are best examined developmentally. Finally, SET emphasizes the interactions that occur within systems, such as the family, as important influences on development and behavior. These models, combined with research findings regarding frequency of sexuality communication (e.g., Fisher, 1987; Leland & Barth, 1993; Miller, Levin et al., 1998; Pick & Palos, 1995), suggest that parents will have a strong influence on the sexual attitudes and behaviors of adolescents. As suggested by these models, the specific mechanisms by which parents and parent-adolescent interactions influence adolescent outcomes include mother-adolescent communication, both general and sexuality-specific.

Quality of Mother-Adolescent Communication

Previous research indicates that mothers' general communication style, or the quality of mothers' communication, relates to adolescent outcomes. For example, Ransom and Fisher (1995) classified families by their communication patterns and examined the health of adolescents from each family type. In this classification scheme, families that avoid affective interactions, are not involved with or focused on each other, and are emotionally avoidant were labeled disconnected. Adolescents from these disconnected families had lower physical health scores than did adolescents from the other family types identified. General mother-adolescent communication has also been related to adolescent sexual behaviors (Ransom & Fisher). Over a period of five years, adolescents who reported good communication with their mothers were more likely to be virgins. Further, decreases in adolescents' ratings of communication were larger among those adolescents who transitioned from virginity to non-virginity (Karofsky et al., 2000). Positive general communication between mothers and

adolescents has also been found to relate to fewer sexual encounters among non-virgin adolescents (O'Sullivan, Jaramillo, Moreau, & Meyer-Bahlburg, 1999). In contrast, negative communication behaviors are related to risky behaviors among adolescents. For example, when parents are not supportive of their adolescents, the youth are more likely to misuse alcohol and to be sexually precocious (Barber, 1992). Similarly, poor connectedness between parents and adolescents is a demonstrated risk factor for early initiation of sexual intercourse (Inazu & Fox, 1980; Leland & Barth, 1993). It appears that poorly connected, or disengaged, mothers fail to provide the involvement and monitoring necessary for protecting adolescents from engaging in potentially risky behaviors (Barber).

Quality of Mother-Adolescent Sexuality Communication

Evidence suggests that in addition to the quality of general communication, the quality of sexuality-specific communication between mothers and adolescents has implications for adolescent sexual attitudes and behaviors. For example, parents who are open and receptive have adolescents who engage in fewer risky sexual behaviors (Kotchick, Dorsey, Miller, & Forehand, 1999). Parents who are less directive when discussing AIDS have adolescents who are more knowledgeable about AIDS (Lefkowitz, Romo, Corona, Au, & Sigman, 2000; Whalen, Henker, Hollingshead, & Burgess, 1996). Further, a defensive communication style of parents, as perceived by their adolescents, appears to create a barrier that may prevent adolescents from learning about sexuality from their parents and from internalizing their parents' sexual attitudes (Rozema, 1986). This line of research suggests that the quality of sexuality communication between parents and adolescents is an important correlate of adolescent sexual attitudes and behaviors. One goal of the current study was to

expand on this body of knowledge, and to identify additional communication qualities that may relate to adolescent sexual attitudes and behaviors.

The quality of mother-adolescent communication can be conceived of as a reflection of the quality of the relationship between mothers and adolescents. For example, it seems likely that mothers who have generally positive relationships with their adolescents are more likely to be involved and receptive when discussing issues such as sexuality than are mothers who have less positive relationships with their adolescents. The concept of relational communication is one way of understanding the quality of both the communication and the relationship between mothers and adolescents. Communication exists at several levels, including the content and relational levels. The content level of communication is that aspect of a message that conveys information (Watzlawick, Beavin, & Jackson, 1967). In contrast, relational communication refers to the part of verbal and nonverbal communication that conveys how individuals in interactions regard each other, how they regard their relationship, and how they identify themselves in the context of their relationship (Burgoon et al., 1995). The relational level of communication is that part of the message that tells the receiver how to interpret the information contained in the content (Seiburg, 1985). For example, a mother who asks her 16 year old daughter, "At what age do you think it's okay to have sex?" in a supportive, kind way conveys a message very different from the mother who asks the same question in an accusatory, hostile manner. The relational part of messages also defines the relationship between the communicators (Seiburg). For example, relational messages may communicate: "We are not communicating;" "I do not acknowledge you;" "I do not want to relate to you;" or "I want to understand you." The most widely studied aspect of relational communication has been relational control (Burgoon & Hale, 1984), because whenever

people communicate they are not just trying to convey a message, but are also trying to get their interaction partner to respond in a particular way (Seiburg). Other dimensions identified early in research on relational communication included involvement, affection, receptivity, and composure (Burgoon & Hale). Just as previous research suggests that positive mother-adolescent sexuality communication relates to fewer risky sexual behaviors and attitudes (East, 1996; Miller, Norton, Fan, & Christopherson, 1998; Mueller & Powers, 1990; Pick & Palos, 1995), the quality of relational communication between mothers and adolescents may also relate to adolescent sexual attitudes and behaviors. Specifically, the extent to which mothers are involved, affectionate, receptive, and composed during sexuality conversations with their adolescents may relate to the sexual attitudes held by the adolescents and to the sexual behaviors the adolescents have engaged in.

This study sought to examine the associations between mothers' observed verbal and nonverbal communication behaviors during sexuality conversations and the sexual attitudes and behaviors of adolescents. Previous research indicates that positive communication relates to fewer risky sexual behaviors and attitudes associated with these behaviors. In the current study, it was expected that mothers who are positive, high quality communicators during sexuality conversations with their adolescents will have adolescents who engage in fewer unsafe sexual behaviors, and who hold attitudes that are associated with safer sex beliefs and values.

Similar patterns were also expected to emerge when examining adolescents' self-reported perceptions of their mothers' communication during previous sexuality conversations. As noted previously, adolescents' perceptions of mothers' communication may be different from observers' evaluations, and may differentially predict adolescent

sexual attitudes and behaviors. Specifically, it was expected that adolescents' perceptions of their mothers' responsiveness during previous sexuality conversations would be negatively related to sexual risk behaviors, and positively related to sexual attitudes that are protective.

Adolescent Individuation

Popular culture and the media often depict adolescents as rebelling in order to attain autonomy from their parents. Early research investigating adolescent emotional autonomy attempted to address the common conception that adolescents must rebel in order to attain independence. Steinberg and Silverberg (1986) found that adolescent development of emotional autonomy is characterized by the trading of emotional dependence on parents for a temporary dependence on peers. In their view, this transference of dependence is adaptive because the emotional distance from parents allows adolescents to rely on their own internal resources. A follow-up to this study using the emotional autonomy measure developed by Steinberg and Silverberg, however, identified negative outcomes associated with high levels of emotional autonomy (Ryan & Lynch, 1989). Adolescents who scored high on the Steinberg and Silverberg measure of emotional autonomy reported feeling less secure in their families and were less willing to draw on parental resources. These researchers concluded that emotional autonomy may be maladaptive because it represents emotional detachment from parents, who are a crucial source of emotional support through adolescence (Ryan & Lynch). Later research building on this line of inquiry demonstrated that autonomy or independence in the context of a warm, supportive relationship with parents is optimal for adolescents. Specifically, Lamborn and Steinberg (1993) found that adolescents who described their relationships with their parents as supportive and who scored high on

measures of emotional autonomy had positive adjustment outcomes, such as academic competence, and fewer problem behaviors. In contrast, when adolescents characterized their relationship with their parents as lacking support, higher emotional autonomy scores were associated with negative adjustment outcomes.

As a result of this debate, many concluded that when autonomy is defined and measured as self-governance and independence, it predicts positive outcomes, and when it is defined as alienation from parents or detachment, it predicts negative outcomes (e.g., Allen, Hauser, O'Connor, Bell, & Eickholt, 1996; Lamborn & Steinberg, 1993; Ryan & Lynch, 1989). An alternative to "autonomy" is "individuation," which combines independence with continued emotional connection to parents (e.g., Cooper, Grotevant, & Condon, 1983; Hill & Holmbeck, 1986). Cooper et al. used the term "individuation" to describe this process of developing independence while remaining emotionally connected to parents. Individuated adolescents are able to have points of view that are different from that of their parents (Cooper et al.), while remaining connected and wanting approval, validation, and respect from parents (Smollar & Youniss, 1989). Striking this balance between independence and connectedness allows adolescents to mature in a number of psychosocial areas including ego development and social competence (Newman, 1989).

Individuation consists of two dimensions, individuality and connection (Cooper et al., 1983). Individuality reflects the independence component of individuation, and consists of self-assertion, or the ability to express one's point-of-view, and separateness, which is the ability to express differences from others, especially parents. Connection, the second dimension of individuation, consists of permeability and mutuality. Permeability is reflected in adolescents' openness and responsiveness to others, and mutuality refers to sensitivity and

respect for others. Individuation, and each of its components, develops in relation to other people, specifically parents. Cooper et al. suggest that individuation is a property of the parent-adolescent relationship, whereas others imply that individuation is a characteristic of the adolescent (e.g., Smollar & Youniss, 1989). Because of the relational nature of individuation, family interactions are an important context for the development of individuation (Allison & Sabatelli, 1988). The present study sought to examine adolescent individuation as it relates to mother-adolescent sexuality communication and to adolescent sexual attitudes and behaviors.

Adolescent Individuation and Mother-Adolescent Communication

Theory and research have both demonstrated an association between mother-adolescent interactions and communication and adolescent individuation. According to Eccles and her colleagues (Eccles, Early, Frasier, Belansky, & McCarthy, 1997), when parents provide support and connectedness, their adolescents are able to develop independence successfully. Others have concluded that family adaptability is important for adolescent ego development to the extent that such adaptability promotes adolescent autonomy (Bakken & Romig, 1989). Clearly, the family provides an important context within which adolescents are able to individuate. The specific parental behaviors that foster such development have been identified in parenting style and family interaction research.

Parenting style research has demonstrated an association between specific parenting behaviors and adolescent individuation. Parents who use a love-oriented parenting style use praise, reasoning, and the temporary withdrawal of affection as strategies of control. This style of parenting allows adolescents to develop independence without needing to detach from, or rebel against, their parents (Pardeck & Pardeck, 1990). In contrast, when parents use

an authoritarian parenting style, their adolescents will conform to their values and wishes, but only when the parents are present. Authoritarian parents tend to be coercive, demanding, and not warm when interacting with and disciplining their adolescents (Darling & Steinberg, 1993; Maccoby & Martin, 1983). An authoritarian style leads to adolescent dependence on parents, antisocial activities, and a stifling of individuation. Any independence that does occur is likely to occur at the expense of connectedness to parents (Pardeck & Pardeck). Permissive parents, on the other hand, provide warmth and support, but demand very little from their adolescents and do little to control their behavior (Maccoby & Martin). This style can foster independence and individuation, but there is the risk that the absence of parental control in this style may cause adolescents to turn to their peers for guidance and influence (Pardeck & Pardeck). Such increased dependence on peers precludes true individuation as it may prevent independent thinking and decision making.

The association between parent-adolescent interaction and adolescent individuation has also been examined at the level of specific parental communication behaviors. Allen and Hauser and their colleagues have examined specific communication patterns in families and their associations with developmental outcomes for adolescents. Specifically, they have examined communication behaviors that promote and inhibit adolescent autonomy and relatedness in relation to their parents (Allen, Hauser, Bell, & O'Connor, 1994; Allen, Hauser, Eickholt, Bell, & O'Connor, 1994). Observed behaviors that promote autonomy and relatedness during revealed differences tasks include expressing and discussing reasons for disagreements, confidence in expressing opinions, validation of and agreement with another's position, and attending to the statements of others. When parents exhibit these behaviors during interactions with their adolescents, the adolescents have more advanced ego

development and higher self-esteem than when these behaviors are absent (Allen, Hauser, Bell et al.). In contrast, parental behaviors that inhibit adolescent autonomy and relatedness are associated with depressed affect and externalizing behaviors in adolescents (Allen, Hauser, Bell et al.). Autonomy-inhibiting behaviors include overpersonalizing disagreements, ending a discussion without agreement or compromise, and pressuring another to agree by using tactics other than rational argument. Behaviors that inhibit relatedness include expressing hostility, interrupting, and ignoring another person (Allen, Hauser, Eickholt et al.). These autonomy-inhibiting and relatedness-inhibiting behaviors are associated with lower levels of adolescent ego development (Allen, Hauser, Eickholt et al.).

This body of research suggests that characteristics of mothers' communication, such as the quality of the communication, may relate to adolescent individuation. In the present study, it was expected that the quality of sexuality communication between mothers and adolescents would be related to adolescents' individuation. During sexuality conversations, positive messages from mothers that convey involvement, affection, receptivity, and composure communicate that the mothers have confidence in the adolescents' abilities to make their own decisions and that the mothers trust the adolescents to be responsibly independent. When using these positive messages, mothers also indicate to their adolescents that they want to remain emotionally connected to the adolescents. Accordingly, it was expected that when mothers demonstrate positive and high quality communication patterns during sexuality conversations with their adolescents, the adolescents would be more strongly connected to their mothers and would report greater independence from maternal control. From the available literature, it was not possible to determine theoretically what constituted "high" connectedness and "high" independence from maternal control for middle

adolescents, and therefore, connectedness and independence from maternal control were operationalized as continuous variables in the current study.

A similar pattern was expected when examining adolescents' self-reported perceptions of their mothers' communication during previous sexuality conversations. Adolescents' perceptions of their mothers' sexuality communication may be different from the evaluations of observers, and may be differentially related to adolescent psychosocial development. Specifically, it was expected that mothers' responsiveness during previous sexuality conversations—as reported by their adolescents—would be positively associated with adolescent connectedness to mother and independence from maternal control.

Adolescent Individuation and Sexual Attitudes and Behaviors

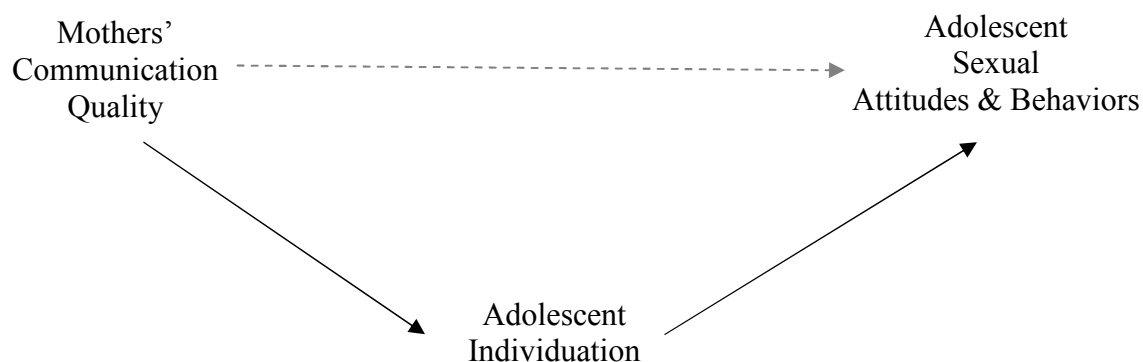
Theory and research indicate that the extent to which adolescents are individuated relates to their sexual attitudes and behaviors (Jessor, Van den Bos, Vanderryn, Costa, & Turbin, 1995; Rodgers, 1999; Turner, Irwin, Tschann, & Millstein, 1993). According to problem behavior theory, high levels of adolescent independence and autonomy without connectedness to parents—detachment—were expected to be associated with low levels of parental control and influence (Jessor et al.). In turn, these low levels of parental control and influence were then expected to predict problem behaviors such as delinquency and alcohol use (Jessor et al.). Empirical evidence supports these claims, with detached adolescents being at increased risk for unhealthy psychosocial development (Beyers & Goossens, 1999). It appears that when adolescents detach from their parents without remaining emotionally connected, they are less likely to be invested in pleasing their parents. As a result, these adolescents may be more prone to problem behaviors (Allen, Aber, & Leadbeater, 1990).

Given that individuated adolescents have healthier adjustment profiles than detached adolescents, it is likely that this healthy adjustment pattern would extend to sexual behaviors (Rodgers, 1999; Turner et al., 1993). For example, individuation facilitates the mature decision-making abilities that are necessary for choosing to use consistent and effective contraception when engaging in sexual activity (Rodgers). The present study sought to understand the relation between individuation and adolescent sexual attitudes and behaviors. To my knowledge, only one study has explored this association. Sixth and seventh grade adolescents who felt individuated from their parents were less likely to have had sexual intercourse than were those who did not feel individuated (Turner et al.). The present study extended this line of research by examining individuation among older adolescents. It was expected that adolescents who are highly individuated—emotionally connected to their mothers and independent from mothers’ control—would report fewer sexually risky behaviors, and would hold sexual attitudes that are associated with safer sex, than would adolescents who are less individuated. In summary, because individuated adolescents tend to make mature decisions and to continue to seek parental approval, it was expected that those who were individuated from their parents would report fewer unsafe sexual behaviors and attitudes than would adolescents who were less individuated.

Further, it was expected that individuation would act as a mediator in the association between mother-adolescent sexuality communication and adolescent sexual attitudes and behaviors (see Figure 1). As suggested by Rodgers (1999), parental communication patterns that are psychologically supportive—and not controlling—are conducive to adolescent development of the independence required for responsible decision making. In contrast,

Figure 1

Mediation of the Association Between Mother-Adolescent Sexuality Communication and Adolescent Sexual Attitudes and Behaviors by Adolescent Individuation



adolescents whose parents use psychological control are less likely to internalize the responsibility necessary for considering the consequences of sexual behavior (Rodgers). The present study sought to build on this research, examining mothers' communication during sexuality conversations with their adolescents. Specifically, it was expected that higher quality observed communication during mother-adolescent sexuality conversations would predict adolescents' higher levels of individuation; higher adolescent individuation in turn would predict adolescents' engaging in fewer unsafe sexual behaviors and endorsing attitudes associated with safer sex more strongly. Individuation was expected to be the mechanism through which mothers' communication patterns relate to adolescent sexual attitudes and behaviors, such that once individuation is introduced into the model, the direct association between the qualities of mothers' communication and adolescent sexual attitudes and behaviors would be attenuated.

In addition, it was expected that adolescent individuation would mediate the association between adolescents' reports of their mothers' responsiveness during sexuality

conversations and the adolescents' sexual attitudes and behaviors. As indicated previously, it will be important to explore the possibility that adolescents' and observers' evaluations of mothers' sexuality communication differentially relate to adolescent individuation and to adolescent sexual attitudes and behaviors.

Adolescent Identity Development

Identity development is the hallmark of adolescence. During this time of life, individuals strive to answer the question "Who am I?" The emphasis on identity development during adolescence emerged largely from Erikson's theory of psychosocial development (1968). According to this theory, development occurs through the process of resolving a series of psychosocial crises. During the adolescent years, the crisis to be resolved is that of identity versus identity diffusion. The development of identity involves integration of different aspects of the self into a coherent whole. In contrast, individuals who are identity diffused have an incoherent, disjointed, incomplete sense of self. According to Erikson, identity develops as adolescents create a meaningful self-concept that integrates the past, present, and future into a coherent whole. Identity development consists of taking new ideas about the self and about one's parents and integrating them into a new, coherent self structure (Erikson). This self structure replaces the regulatory function that parents serve during childhood. The "self" that emerges provides adolescents with the tools needed to regulate their emotions, to assume greater initiative and agency, and to be less dependent on the reactions and expectations of significant others (Lopez, 1992). Further, a developed identity allows individuals to filter and process information, manage impressions and select appropriate behaviors (Adams & Marshall, 1996). An identity that is developed provides

individuals with a general framework through which to view the world, to make decisions, and to develop values (Kroger, 1996).

The most widely used conceptualization of identity is the identity status model (Marcia, 1966, 1976, 1980). Identity status provides a tool for assessing the extent to which individuals have developed a coherent sense of self. The identity status model is based on two identity development processes: exploration and commitment. Identity exploration is the process of examining oneself, the environment, and different identity possibilities in order to make decisions about the self (Grotevant, 1987). This process includes experimentation, investigation, trial, searching, and hypothesis testing. Commitment is the process by which individuals settle on decisions about themselves (Marcia, 1980). Based on the extent to which they have explored and committed, individuals are assigned to one of four identity statuses (Marcia, 1980). The first status, identity achievement, includes those individuals who have been through a period of exploration and have made commitments. Moratorium is the status in which individuals are currently exploring but have not made many commitments. Identity foreclosure is the status in which individuals have made identity commitments without a period of exploration, often because of parental expectations or demands. Finally, individuals in identity diffusion are not currently exploring and have not made any identity commitments (Marcia, 1980).

Research on identity status indicates that status has implications for psychosocial adjustment. In general, adolescents in the diffusion status have the lowest maturity levels, and those who are achieved have the highest maturity levels (Bosma & Kunnen, 2001). It is not clear, however, if foreclosure or moratorium represents a higher level of maturity (Bosma & Kunnen). Adolescents with an achieved identity status are psychologically healthier than

adolescents in the other statuses. They score highest on measures of achievement motivation, moral reasoning, and intimacy with peers (Wallace-Broschius, Serafica, & Osipow, 1994). Although these adolescents have made commitments, the commitments are flexible and adaptive as a result of emerging from a period of exploration and experimentation (Bosma & Kunnen). Commitments that are self-chosen after exploration, as opposed to those that are imposed or assigned, indicate the individual has learned and internalized the self-regulation developed through interactions with his or her parents. Adolescents who are in the moratorium status are more anxious than others, and have the most conflict over issues of authority (Bosma & Kunnen; Wallace-Broschius et al.). Identity foreclosed adolescents, having made commitments without exploration, are the most authoritarian. Although their commitments are strong, they are less flexible and adaptive than are the commitments made by those in the achieved status. Given that the “assigned” commitments that foreclosed adolescents have made are often the result of parental pressures and expectations, it is not surprising that these adolescents have the greatest need for social approval, the least autonomy, and are closer to their parents than are adolescents of the other identity statuses (Bosma & Kunnen). Finally, adolescents with a diffused identity status are more socially withdrawn and have less intimacy with their peers than adolescents in the other statuses (Bosma & Kunnen).

Grotevant (1987) and Waterman (1982) built on Erikson’s developmental approach to adolescent identity formation, focusing on the context in which development occurs. The family is one important context that influences identity development. For example, the absence of parental encouragement of individuality has been associated with unhealthy and age-inappropriate identity exploration (Campbell, Adams, & Dobson, 1984). In addition, a

lack of parental warmth has been found to relate to adolescent difficulties with making commitments (Campbell et al.). Clearly, the family is an important context for identity development.

Adolescent Identity Development and Mother-Adolescent Communication

According to Adams and Marshall (1996), identity, or a sense of self, is constructed within a relational context. The family systems model of identity development considers the “self” to be a relational phenomenon that emerges in the context of the family (Lopez, 1992). This perspective is consistent with Erikson’s position that identity emerges through adolescents’ interactions with others (1968). During identity exploration, adolescents are attuned to the reactions of others, especially their parents (Papini, 1994). By responding to parents’ reactions, adolescents choose the personality, roles, beliefs, and attitudes they want as part of their identity (Lopez). As such, the parent-adolescent relationship is particularly important for adolescent identity development (Papini).

In general, identity development is facilitated when families are emotionally connected, supportive, and when there is open communication in the family (Adams, Dyk, & Bennion, 1990; Papini, 1994). Parental support appears to provide the security adolescents need as they explore and develop their identities (Sartor & Youniss, 2002). Adolescents who report maternal encouragement of independence, companionship with their parents, and support from their parents are more likely to be in a period of exploration, or to have made identity commitments after a period of exploration (Markstrom-Adams, 1992). In contrast, when families are not emotionally connected, adolescents do not have a secure base from which to explore and, ultimately, commit (Papini). When adolescents report that their parents are rejecting and not affectionate, adolescents are not likely to have committed to an identity,

nor are they likely to be exploring possible identities (Markstrom-Adams). Identity formation is facilitated when adolescents' parents permit and affirm their different expressions of self (Lopez, 1992). When parents are accepting and non-authoritarian during this time, their adolescents are able to experiment, differentiate, and ultimately commit to an identity (Kroger, 1996).

The association between the parent-adolescent relationship and identity development has also been examined at the level of specific communication behaviors. For example, Grotevant and Cooper (1985) found that when parents communicated separateness to their daughters during observed family interactions, the daughters scored higher on identity exploration. Communicating separateness included disagreeing with and asking the daughters to take a specific action. Identity exploration has also been associated with what Cooper and her colleagues refer to as mothers' connectedness, which refers to the presence of self-assertion, compromise, and stating the feelings of others in the family (Cooper et al., 1983). Mother-adolescent communication patterns have also been related to adolescent identity exploration specifically in the realm of dating. Female adolescents who scored high on exploration regarding dating had parents who respected their ideas and did not interfere with their activities (Cooper & Grotevant, 1987). Male adolescents who scored high on exploration in the realm of dating had parents who encouraged that exploration by not being intrusive and by showing trust in their son's judgment (Cooper & Grotevant).

The communication behaviors of parents have also been found to relate to the identity status of their adolescents. Adolescents who have an achieved identity status tend to have parents who encourage their autonomy and independence (Sabatelli & Mazor, 1985). These adolescents' parents use a democratic parenting style in which the parents and adolescents

make decisions together (Waterman, 1982). Adolescents who are in moratorium tend to have somewhat tense relationships with their parents. This tension between parents and adolescents is often due to ambivalence about the adolescents' development (Marcia, 1980). Adolescents who have foreclosed identity statuses identify with their parents more than adolescents of the other statuses (Waterman). These adolescents are extremely close to their parents, which fosters the identity commitments that occur without a period of exploration (Marcia). Parents of foreclosed adolescents tend to use an authoritarian parenting style in which the parents' thoughts and ideas are the rule, resulting in conformity by the adolescents. Finally, adolescents with diffused identity statuses tend to have permissive, neglecting, indifferent, detached, or rejecting parents (Marcia; Sabatelli & Mazor; Waterman). These adolescents have difficulty resolving their identity issues, and feel insecure about doing so (Waterman).

This body of research indicates that characteristics of mothers' communication, such as the quality of the communication, relate to adolescent identity development. Positive messages from mothers that communicate involvement, affection, receptivity and composure provide a secure environment in which adolescents can explore their identities. In supporting adolescents' identity exploration, these messages also indicate to adolescents that their identity commitments will be supported. Accordingly, it was expected that the quality of mothers' communication when discussing sexuality with their adolescents would be positively associated with adolescent identity exploration and commitment. In contrast, when mothers demonstrate low quality communication in their interactions with their adolescents, it was expected that the adolescents would score low on identity exploration and would have made very few identity commitments. From the available literature, it was not possible to

determine theoretically what would constitute “high” exploration and “high” commitment for middle adolescents; thus, identity exploration and commitment were treated as continuous constructs in this study.

Similar patterns were expected to emerge when examining adolescents’ self-reported perceptions of their mothers’ communication during previous conversations about sexuality. Adolescents’ perceptions of their mothers’ responsiveness during previous sexuality conversations may differ from the evaluations of observers, and may relate to adolescent identity exploration and commitment differently. Specifically, it was expected that adolescents’ perceptions of their mothers’ responsiveness during sexuality conversations would be positively related to adolescent identity exploration and commitment.

Adolescent Identity Development and Sexual Attitudes and Behaviors

The present study sought to examine the associations between adolescent identity development and sexual attitudes and behaviors. Previous research indicates that when adolescents have not engaged in identity exploration or made identity commitments, they are likely to have poor outcomes such as substance misuse (Jones, 1992). In addition, research demonstrates that adolescents who are in the achieved or moratorium identity statuses tend to take greater responsibility for their actions than those who are in the foreclosed or diffused identity statuses (Waterman, 1992). The implication of this finding is that adolescents who have not explored, or are not currently exploring possible identities, have poorer outcomes. Specifically, those who are achieved have engaged in identity exploration and have made identity commitments. Adolescents in moratorium are currently engaged in identity exploration, although they have made some commitments. In contrast, adolescents who are foreclosed have not engaged in exploration, but have made commitments, and adolescents

who are diffused have not engaged in exploration or are not currently exploring, nor have they made commitments. It appears that one difference between those with positive outcomes and those with negative outcomes is exploration. In addition, those with positive outcomes have made commitments that are based on explorations of ideas and values. Thus, the existence of adolescent exploration—whether current and ongoing, or in the past—and identity commitments would be expected to relate to more positive outcomes.

According to Erikson (1968), when adolescents are unsure of their identity, they may attempt to define themselves through sexual activity. Although Erikson does not explicitly distinguish between exploration and commitment, adolescent uncertainty could include several combinations of exploration and commitment, including greater exploration with either more or fewer commitments, or less exploration with fewer commitments. Adolescents who have not explored or are not currently exploring and have made few commitments have probably not engaged in much identity exploration at all, and are likely to be the least sure of their identities. In contrast, adolescents who are actively engaged in exploration or have explored in the past, but have made some commitments may be more sure of their identities. It may be, however, that they are still somewhat unsure of their identities and, therefore, are still engaged in the exploration process. The common feature of each of these types of uncertainty is less identity exploration. Uncertainty of any of these varieties—and the attendant lack of identity exploration—may be associated with more negative outcomes, which could include risky sexual behaviors. It should be noted as well that greater exploration could manifest in greater sexual exploration. In that case, greater exploration could include riskier sex. If, however, adolescents are engaged in identity exploration in a variety of other domains, they may be less likely to be actively exploring their identities

through sexual activity. Thus, it was expected that adolescent identity exploration would be related to sexual behaviors and attitudes, such that more exploration would be associated with fewer unsafe sexual behaviors, and with attitudes associated with safer sex behaviors.

It was also expected that adolescent identity commitment would relate to adolescent sexual behaviors and attitudes. Previous research suggests that successful identity development involves making identity commitments, and that more identity commitments will be associated with more positive outcomes (Markstrom-Adams, 1992). Waterman's (1992) research indicates that those adolescents who have made fewer commitments are at greater risk for negative outcomes. This conclusion may appear to indicate that we would expect negative outcomes associated with the moratorium identity status. However, the moratorium status is not one in which no commitments have been made. Instead, those adolescents in moratorium have made some commitments, albeit fewer than achieved adolescents. As suggested by Cooper and Grotevant (1987), the more commitments adolescents have made, the clearer they are about their values. In turn, that clarity about values may provide adolescents with a stronger base for resisting peer pressure and for making responsible decisions. Thus, it was expected that adolescents who have made more identity commitments would report fewer unsafe sexual behaviors, and stronger attitudes associated with safer sex behaviors.

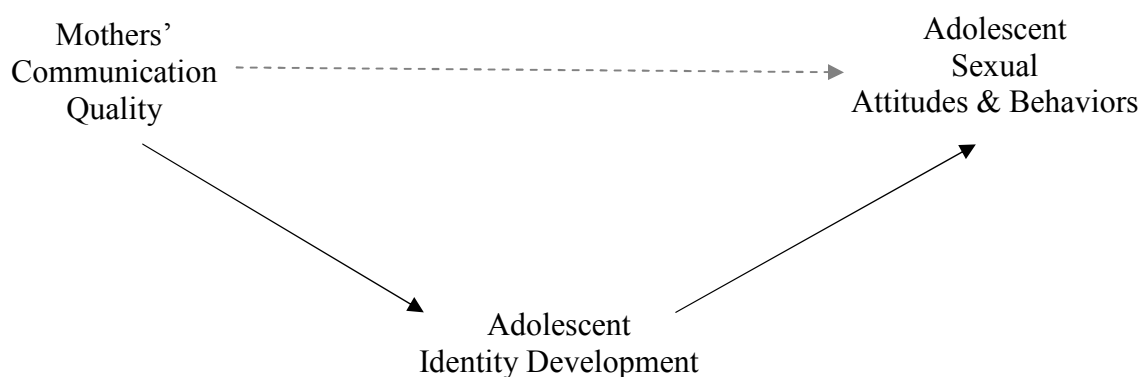
Further, it was expected that identity exploration and commitment would act as mediators in the relation between mother-adolescent sexuality communication and adolescent sexual attitudes and behaviors (see Figure 2). Specifically, it was expected that the quality of mother-adolescent sexuality communication would relate to adolescents' sexual risk taking, but that once exploration and commitment were introduced into the model, the direct

association would be attenuated. The quality of mothers' communication when discussing sexuality with their adolescents would predict identity exploration and commitment, which would in turn predict fewer unsafe sexual behaviors, and associated attitudes.

A similar pattern was also expected to emerge when examining adolescents' self-reported evaluations of their mothers' communication during previous sexuality discussions. Specifically, it was expected that the association between adolescents' reports of their mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes would be mediated by adolescent exploration and commitment.

Figure 2

Mediation of the Association Between Mother-Adolescent Sexuality Communication and Adolescent Sexual Attitudes and Behaviors by Adolescent Identity Exploration and Commitment



In summary, the following aims, research questions, and hypotheses were examined:

Aim 1: To understand patterns of sexuality communication in mother-adolescent dyads.

Research Question 1: What are the patterns of observed sexuality communication in mother-adolescent dyads, and how do they relate to adolescent reports of the quality and quantity of previous sexuality conversations?

Aim 2: To use observational methods to examine mothers' communication quality during sexuality conversations, and the associations between mothers' communication quality and adolescent sexual attitudes and behaviors.

Hypothesis 1: Mothers' observed communication and adolescent sexual attitudes and behaviors would be associated, such that in dyads where mothers demonstrate positive, high quality communication during mother-adolescent sexuality conversations, their adolescents would engage in fewer unsafe sexual behaviors, and would hold attitudes that are associated with safer sex behaviors.

Aim 3: To examine adolescents' perceptions of their mothers communication responsiveness during previous sexuality conversations and the associations between those perceptions and adolescents' sexual attitudes and behaviors.

Hypothesis 2: Adolescents' perceptions of their mothers' communication and the adolescents' sexual attitudes and behaviors would be related, such that in dyads where adolescents perceive their mothers as more responsive communicators during previous sexuality conversations, the adolescents would engage in fewer unsafe sexual behaviors, and would hold attitudes that are more strongly associated with safer sex behaviors.

Aim 4: To understand adolescent individuation as it relates to the associations between mother-adolescent sexuality communication and adolescent sexual attitudes and behaviors.

Hypothesis 3: Mothers' observed communication and adolescent individuation would be associated. Specifically, in dyads where mothers demonstrate positive, high quality communication during sexuality conversations with their adolescents, the adolescents would be more emotionally connected to their mothers and more independent from maternal control.

Hypothesis 4: Adolescents' perceptions of their mothers' communication and adolescent individuation would be associated. In dyads where adolescents perceive their mothers as more responsive during previous sexuality conversations, the adolescents would be more emotionally connected to their mothers and more independent from maternal control.

Hypothesis 5: Adolescents who are more emotionally connected to their mothers and more independent from maternal control would report fewer sexually risky behaviors, and would hold sexual attitudes that are more strongly associated with safer sex.

Hypothesis 6a: Adolescent connectedness to mother and independence from maternal control would mediate the association between mothers' observed communication quality during sexuality conversations and adolescent sexual attitudes and behaviors.

Hypothesis 6b: Adolescent connectedness to mother and independence from maternal control would mediate the association between adolescents' reports of their mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes and behaviors.

Aim 5: To understand adolescent identity development as it relates to the associations between mother-adolescent sexuality communication and adolescent sexual attitudes and behaviors

Hypothesis 7: Mothers' observed communication and adolescent identity development would be positively associated. Specifically, adolescents whose mothers demonstrate positive, high quality communication during sexuality conversations would score higher on identity exploration and commitment.

Hypothesis 8: In dyads where adolescents perceive their mothers as more responsive communicators during previous sexuality conversations, the adolescents would score higher on identity exploration and commitment.

Hypothesis 9: Adolescent identity exploration and commitment would relate to adolescent sexual attitudes and behaviors, such that more exploration and commitment would be associated with less risky sexual behavior and with stronger attitudes that are associated with safer sexual behavior.

Hypothesis 10a: Adolescent identity exploration and commitment would mediate the association between mothers' observed communication quality during sexuality conversations and adolescent sexual attitudes and behaviors.

Hypothesis 10b: Adolescent identity exploration and commitment would mediate the association between adolescents' reports of their mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes and behaviors.

Chapter 2

METHOD

Sample

Fifty-two mother-adolescent dyads participated in the study. Thirty-seven (71%) were mother-daughter dyads, and 15 were mother-son dyads. Families were recruited from the community around a major university in central Pennsylvania. The primary recruitment strategy accessed families through rural area high schools. Letters describing the study were delivered to the schools. The schools distributed the letters to students in the 10th and 11th grades and asked the students to take the letters home. The letters, addressed to the students' mothers, described the study and invited the mothers to complete and return an enclosed postcard if they were interested in participating. Interested mothers and adolescents were then contacted by phone to arrange an appointment. Forty-one families (79%) were contacted in this way. The remaining eleven families were recruited through announcements in church bulletins, flyers in libraries and coffee shops, an announcement in a university faculty/staff newsletter, and by snowball recruitment, with families that had participated telling others about the study.

Mothers. The mothers ranged in age from 34 to 58, and the average age of the mothers was 43.0 years (SD = 5.1). Nearly two-thirds of the mothers were married to the biological father of the participating adolescent (see Table 1). The remaining mothers were divorced, married but not to the participating adolescent's father, and widowed. A majority of the mothers who participated in the study were European American. Most mothers reported that they were Christian/Protestant; roughly one-fifth reported that they were Catholic, and a small minority selected "none of the above" from the list of possible religions

Table 1

Mothers' Sociodemographic Characteristics

Variable	<u>N</u>	%
Marital Status		
Married to adolescent's father	34	65.4
Married to different man	7	13.5
Divorced	9	17.3
Widowed	2	3.8
Ethnicity		
European American	51	98.1
African American	1	1.9
Religion		
Christian/Protestant	37	71.2
Catholic	9	17.3
None of the above	6	11.5
Education		
High school	14	26.9
Some college	8	15.4
Vocational training	6	11.5
Associate's degree	4	7.7
Bachelor's degree	9	17.3
Graduate/professional degree	11	21.2
Household Income		
\$0-10,000	1	1.9
\$10,001-30,000	10	19.2
\$30,000-60,000	15	28.8
\$60,001-80,000	15	28.8
\$80,001-100,000	6	11.5
\$100,000 and over	5	9.6

which included Jewish and Muslim in addition to Christian/Protestant and Catholic. Of the mothers who indicated that they attended church (67%), they reported going to services an average of 38 times in the past year (SD = 31.7). Mothers' education varied greatly, from high school graduate to graduate or professional degree. Roughly a quarter of the mothers completed only high school, nearly one-fifth completed college, and one-fifth had obtained a

graduate or professional degree. Family income also varied greatly from \$0-\$10,000 to over \$100,000, with the median household income in the \$60,000 to \$80,000 range.

Adolescents. The adolescents ranged in age from 15 to 18, and their average age was 16.3 years ($SD = 0.8$). Nearly all of the adolescents were European American, and one was African American (see Table 2). The most commonly reported religion was Christian/Protestant, followed by Catholic. Small minorities of the adolescents reported that they were Jewish, or selected “none of the above” from the list of possible religions. More than three-quarters of the adolescents indicated that they attended church. Those who did attend church

Table 2

Adolescents' Sociodemographic Characteristics

Variable	N	%
Gender		
Female	37	71.2
Male	15	28.8
Ethnicity		
European American	51	98.1
African American	1	1.9
Religion		
Christian/Protestant	32	61.5
Catholic	10	19.2
Jewish	2	3.8
None of the above	8	15.4
Grade in School		
10 th	26	50.0
11 th	24	46.2
12 th	2	3.8
Self-Reported Grades in School		
A	21	40.4
A-	12	23.1
B+	5	9.6
B	10	19.2
B-	1	1.9
C	3	5.8

(85%) reported going to services about 30 times in the past year ($SD = 28.6$). Half of the adolescents in the study were in the 10th grade, and nearly half were in the 11th grade. In addition, two of the participating adolescents, who were recruited through churches and snowball recruiting, were in the 12th grade. The adolescents reported their grades in school as ranging from “A” to “C,” with “B+” as the average letter grade reported by the participating adolescents.

Procedure

All data collection occurred in the homes of the participating families during the afternoon and evening hours, and on weekends. Upon arriving at the homes of the participants, the experimenter briefly explained the study to the mothers and the adolescents. The adolescents and mothers then read and signed consent forms. In addition, the mothers completed consent forms giving their permission for their adolescent to participate in the study. The dyads were then given the opportunity to ask questions about the study. The mothers and adolescents were seated in a comfortable and private location in their home where they could talk freely without concern about other family members overhearing their conversation. At this time, the videotaping portion of the data collection began.

Each dyad engaged in four conversations, each for seven minutes. In the first conversation, the mothers and adolescents were instructed to discuss “everyday issues” for seven minutes. This conversation served as a “warm up” task, acclimating the mothers and adolescents to the task and to the presence of the video camera. In the remaining conversations, the mothers and adolescents were asked to talk about “sexuality,” “drugs and alcohol,” and “nutrition and exercise.” The order of these three conversations was counterbalanced to avoid systematic differences associated with order effects. For each

conversation, the researcher gave the following instructions: “For the next 7 minutes, I’d like you to talk about sexuality (everyday issues, drugs and alcohol, or nutrition and exercise).” The instructions given to the mothers and adolescents were intentionally general to avoid influencing the specific topics discussed. The researcher left the room during the conversations. Only the “sexuality” conversation was used for the purposes of the present study.

Following the videotaping, the mothers and adolescents completed a series of questionnaires. To provide for participant privacy, the mothers and adolescents were separated while completing the questionnaires. They either sat across the room from each other, or in different rooms. Upon completion of the questionnaires, the mothers and adolescents were debriefed about the study. In addition, each mother and each adolescent received a payment of \$25.

Observations of Mothers’ Communication Quality

Ten items from subscales of the Relational Communication Scale (Burgoon, 1994) were used to assess the global quality of mothers’ communication during the sexuality conversation. Only 50 of the 52 families in the study provided usable videotaped conversations. One mother-adolescent dyad failed to follow the instructions, and another dyad’s videotape was not usable due to equipment failure. Three coders rated the mothers on ten items that assessed the quality of mothers’ communication in areas such as involvement, affection, composure, and receptivity during the conversation (see Appendix A). The coders rated, on a 7-point scale from “strongly disagree” to “strongly agree” the extent to which each item described the behavior of the mothers during the conversation. The coders were trained in this procedure using training tapes, which were videotapes of similar conversations

from a previous study (Lefkowitz, Sigman et al., 2000). When the coders achieved acceptable interrater reliability for each item, indicated by an intraclass correlation of at least .75, they began coding the videotapes for the present study. Two coders independently viewed each videotape and rated each mother on the ten measures of communication quality. The coders then met to discuss and resolve any disagreements in their coding of the mothers. When necessary, the coders viewed the videotapes again in order to come to consensus on the ratings. The ratings agreed upon by the coders constitute the data used for measuring mothers' communication quality during the sexuality conversations. One item was dropped from further analyses because of low interrater reliability (intraclass correlation = .53). Interrater reliability for the remaining nine items was marginally acceptable to good, with intraclass correlations ranging from .61 to .86 (average intraclass correlation = .76) (see Table 3).

A principal axis analysis with oblique rotation was conducted with the nine communication quality items. Two factors were extracted. The pattern matrix and factor loadings of these nine items are presented in Table 3. Items were considered to load on a factor if they had a factor loading score of greater than .50 and did not load as well on the other factor. The first factor to emerge from the analysis was labeled "composure." This factor encompasses the degree to which the mothers appeared to be engaged with their adolescents and comfortable with both the adolescent and with the topic of sexuality. The second factor to emerge was labeled "receptivity." This factor measured the extent to which the mothers appeared to be open to their adolescents' thoughts and feelings. As indicated in Table 6, these factors were only moderately associated, and therefore were treated as separate variables in the analyses.

Table 3

Means, Standard Deviations, Pattern Matrix Item Loadings, and Intraclass Correlations for Mothers' Observed Communication Quality

Factor Item	<u>M</u>	<u>SD</u>	Item Loading	Intraclass Correlations
Composure				
Mother acted like she was enjoying the conversation.	4.50	1.11	.87	.72
Mother was highly involved in the conversation.	5.24	.89	.85	.86
Mother appeared detached during the conversation.*	5.58	1.07	.85	.61
Mother tried to establish rapport with her adolescent.	5.00	.88	.84	.78
Mother appeared comfortable interacting with her adolescent.	4.86	.99	.81	.74
Mother act bored by the conversation.*	5.54	1.01	.80	.79
Mother communicated coldness rather than warmth.*	5.66	.96	.71	.76
Receptivity				
Mother was open to her adolescent's ideas.	5.08	1.03	.91	.80
Mother was willing to listen to her adolescent.	5.34	.96	.65	.78

Note. 1 = strongly disagree; 7 = strongly agree.

* Indicates items that were reverse scored.

Questionnaire Measures

Adolescent reports of mothers' communication. Adolescents' perceptions of the quality of their mothers' communication during previous sexuality conversations were assessed using an 8-item self-report measure (Miller, Kotchick, Dorsey, Forehand, & Ham 1998) (see Appendix B). The adolescents were asked to evaluate previous conversations with

their mothers about sexuality, which were described as including discussions about when to start having sex, birth control, reproduction, physical and sexual development, menstruation, masturbation, and handling pressures to have sex (e.g., “My mother knows how to talk to me about topics like this”). The adolescents rated each statement on a 5-point scale, ranging from “strongly disagree” to “strongly agree.” In previous research with late adolescents, this measure of adolescents’ perceptions of the quality of mothers’ communication had good internal consistency ($\alpha = .86$, Boone, 2002; $\alpha = .74$, Miller et al.). In the current study, this measure also demonstrated good reliability ($\alpha = .90$).

Frequency of mother-adolescent sexuality communication. The adolescents reported on how frequently they had talked with their mothers in the past about 14 sexuality-related topics (see Appendix C). The items included were adapted from existing measures of communication about sex with parents (DiIorio et al., 1999; Feldman & Rosenthal, 2000; Jaccard, Dittus, & Gordon, 1998). Participants indicated how frequently the conversations had occurred on a 4-point scale (never, once, a few times, often).

Following the techniques of Lefkowitz, Boone, and Shearer (in press), a principal axis analysis with oblique rotation was conducted with all 14 items. Three items loaded on multiple factors at a moderate level. These three items (condoms, homosexuality, sexual intercourse) were removed from the principal axis analysis. The principal axis analysis was performed again with the remaining 11 items. Table 4 presents the pattern matrix and factor loadings for these 11 items. Items were considered to load on factors if they had a factor loading score of greater than .50 and did not load on any other factors as well. The three

Table 4

Means, Standard Deviations, and Pattern Matrix Item Loadings for Adolescents' Reports of Frequency of Communication Between Mothers and Adolescents about Sexuality Topics

Factor Item	<u>M</u>	<u>SD</u>	Item Loading
Sexual Safety			
HIV/AIDS	1.32	1.07	.82
STDs	1.33	1.02	.76
Abortion	1.23	1.22	.67
Safer sex	1.58	1.07	.61
Contraception	1.54	1.02	.53
Physical Development			
Physical development	1.83	.94	.92
Menstruation	2.13	1.21	.50
Sexual Feelings			
Sexual satisfaction	.73	.98	.88
Sexual desire	.92	1.06	.83
Sexual pressure	1.24	1.12	.77
Partner choice	1.27	1.19	.63

Note. 0 = never; 1 = once; 2 = a few times; 3 = often.

factors that emerged from the analysis were labeled sexual safety, physical development, and sexual feelings. As indicated in Table 6, these three factors were only moderately associated, and therefore were treated as separate variables in the analyses.

Adolescent sexual behaviors. Those adolescents who reported having had sexual intercourse at some time in the past completed a series of questions about their sexual history (Melchert & Burnett, 1990). They answered questions about their first sexual intercourse experience and about their most recent sexual intercourse experience. Specifically, the adolescents were asked about their relationship with their sexual partner (“just met” to “dating seriously”), if they had used a condom, if they had used contraception, and if so what

kind, and if they had consumed alcohol before or during sexual intercourse. In addition, the adolescents indicated how old they were the first time they had sexual intercourse, how many sexual partners they had had in their lifetime, and how many sexual partners they had had in the past three months.

Conservative sexual attitudes. A modified, 15-item version (Lefkowitz, Gillen, Shearer, & Espinosa-Hernandez, 2003) of the Sexual Attitudes Scale (Hudson, Murphy, & Nurius, 1983) was used to assess the adolescents' general conservative sexual attitudes (e.g., "I think that young people have been given too much information about sex") (see Appendix D). The items removed from the original measure were deemed outdated or inappropriate for the adolescents in the current study. For example, one item that was removed read, "Sex should be devoted to procreation." Respondents were asked to rate their agreement with each item on a 5-point scale, from "strongly disagree" to "strongly agree." This measure demonstrated good reliability ($\alpha = .90$).

Perceived vulnerability to AIDS. Two subscales from the Multidimensional AIDS Anxiety Questionnaire (Snell & Finney, 1996) were used to assess adolescents' fears and anxieties about AIDS (see Appendix E). The first subscale of the measure consists of six items and measures participants' fear of AIDS (e.g., "I feel scared about AIDS when I think about sexual relationships"). The second subscale consists of five items and assesses participants' anxiety about AIDS (e.g., "Thinking about AIDS makes me feel anxious"). Respondents rated their agreement with each item on a 5-point scale ranging from "strongly disagree" to "strongly agree." This measure has demonstrated good reliability in previous research ($\alpha = .85 - .94$, Snell & Finney). With the current sample, the subscales of this measure also demonstrated good reliability ($\alpha = .92$ for fear, $\alpha = .89$ for anxiety). In addition,

participants were asked to assess the likelihood that they would get HIV in the next five years. The adolescents assessed their likelihood in comparison to other young people their age on a 5-point scale from “much less likely” to “much more likely.”

Positive condom attitudes. A subscale of the Sexual Risk Behavior Beliefs and Self-Efficacy Scales was used to measure adolescents’ general attitudes about condoms (Basen-Engquist et al., 1996). This three-item scale assesses the extent to which individuals believe that condoms should be used in different sexual situations (e.g., “I believe condoms should always be used if a person my age has sex, even if the two people know each other very well”) (see Appendix F). The adolescents indicated their agreement with each statement on a 5-point scale, from “strongly disagree” to “strongly agree.” This measure has demonstrated good reliability in previous research ($\alpha = .85$, Basen-Engquist et al.), and in the current study ($\alpha = .85$).

Barriers to condom use. A subscale of the Sexual Risk Behavior Beliefs and Self-Efficacy Scales was used to assess barriers to adolescent condom use (Basen-Engquist et al., 1996). This three-item subscale measures the extent to which adolescents perceive barriers to their use of condoms (e.g., “I would feel uncomfortable carrying condoms with me”) (see Appendix G). The adolescents indicated their agreement with each statement on a 5-point scale, from “strongly disagree” to “strongly agree.” In previous research, this measure has demonstrated satisfactory reliability ($\alpha = .66 - .73$, Basen-Engquist et al.), and with the current sample, reliability was good ($\alpha = .78$).

Outcome expectancies for condom use. The Outcome Expectancies for Condom Use Scale (Jemmott & Jemmott, 1992) was used to measure participant expectations for the protective properties of condoms (see Appendix H). This three-item subscale assesses the

extent to which participants believe that condoms can protect them from pregnancy and STIs including AIDS (e.g., “Condoms can prevent sexually transmitted diseases”). Participants rated their agreement with the statements on a 5-point scale ranging from “strongly disagree” to “strongly agree.” As in previous research ($\alpha = .83$, Boone & Lefkowitz, 2003) reliability for this measure was good ($\alpha = .90$).

Adolescent individuation. Adolescent individuation was measured using a 13-item measure that assesses adolescent emotional connectedness to mothers as well as independence from maternal control (see Appendix I) (Baik, 1997). This measure consists of two subscales. The first subscale contains ten items and assesses the adolescents’ sense of connection to their mothers (e.g., “My mother and I feel emotionally close to one another”). The second subscale contains three items and measures the extent to which adolescents feel independent from their mothers’ control (e.g., “My mother does not tell me how to handle my life”). The adolescents indicated their agreement with the 13 statements on a 5-point scale ranging from “strongly disagree” to “strongly agree.” In previous research, these subscales demonstrated good internal consistency ($\alpha = .75 - .91$, Baik). With the current sample, reliability was marginally acceptable for the independence from maternal control subscale ($\alpha = .63$), and good for the connectedness subscale ($\alpha = .93$).

For the current study, adolescent connectedness to mother and independence from maternal control were evaluated separately, and were treated as continuous variables. Although it would have been possible to create dichotomous variables for each element of individuation using a median split, this approach was not chosen for two reasons. First, a median split would have generated data-based groups that may not have represented the

theoretical meanings of, for example, high and low connectedness. Second, the sample was too small to make meaningful comparisons among any groups generated using a median split approach. Thus, connectedness to mother and independence from maternal control were evaluated as separate variables, and were treated as continuous variables.

Adolescent identity development. Adolescent identity development was assessed using the Ego Identity Process Questionnaire (see Appendix J) (Balistreri, Busch-Rossnagel, & Geisinger, 1995). This 32-item scale measures identity exploration and commitment in four ideological domains (politics, religion, occupation, and values) and four interpersonal domains (friendship, dating, family, and sex roles). This measure contains two exploration and two commitment items per domain for a total of 16 exploration and 16 commitment items. The adolescents indicated their agreement with each statement on a 6-point scale ranging from “strongly disagree” to “strongly agree.” Each adolescent received a score for exploration and a score for commitment. In previous research, the exploration and commitment scales demonstrated acceptable internal consistency with alpha coefficients above .75 (Balistreri et al.; Berman, Schwartz, Kurtines, & Berman, 2001). In the current sample, reliability was marginally acceptable ($\alpha = .69$ for exploration, $\alpha = .60$ for commitment).

For the current study, adolescent identity exploration and identity commitment were evaluated separately, and were treated as continuous variables. Although it would have been possible to create dichotomous variables using a median split, this approach was not chosen for two reasons. First, a median split would have generated data-based groups that may not have been theoretically meaningful. Second, the sample was too small to make meaningful

comparisons among any groups generated using a median split approach. Thus, identity exploration and commitment were treated separately, and as continuous variables.

Chapter 3

RESULTS

Preliminary and Descriptive Analyses

Mother-adolescent sexuality communication. Means, standard deviations, and ranges for each of the communication variables are presented in Table 5. The mean score on mothers' observed composure translates to a rating of 5.2 on a 7-point scale, which indicates that mothers were seen as "quite composed" during the sexuality conversation. The mean score for mothers' observed receptivity translates to an average rating of 5.2 on a 7-point scale, which indicates that mothers were "quite receptive" during the sexuality conversation. Adolescent ratings of their mothers' responsiveness during previous sexuality conversations were, on average, 3.7 on a 5-point scale. This score indicates that on average the adolescents in the study perceived their mothers' previous sexuality communication as "somewhat responsive."

Adolescent sexual attitudes. Means, standard deviations, and ranges for each of the adolescent sexual attitude variables are presented in Table 5. Adolescents' average rating of conservative sexual attitudes was 2.9 on a 5-point scale, indicating on average neither agreement or disagreement with the conservative statements about sex. The mean score for adolescent fear of AIDS translates to an average rating of 3.3 on a 5-point scale. This score indicates moderate levels of adolescent fear of AIDS. Adolescents rated their anxiety about AIDS as, on average, 2.6 on a 5-point scale, which indicates that adolescents were somewhat to moderately anxious about AIDS. The mean score for adolescent perceived likelihood of future HIV infection was 1.9 on a 5-point scale, which indicates that adolescents believed they are only somewhat likely to be infected with HIV. Adolescents rated their attitudes

Table 5

Means, Standard Deviations, and Ranges for Predictor, Outcome, and Mediator Variables

Variable	Possible Range	Actual Range	<i>M</i>	<i>SD</i>
Observer report				
Mothers' composure	7 – 49	19 – 47	36.4	5.9
Mothers' receptivity	2 – 14	6 – 14	10.4	1.8
Adolescent report				
Mothers' responsiveness	8 – 40	13 – 40	29.7	7.2
Conservative sexual attitudes	15 – 75	19 – 67	44.0	11.7
Perceived AIDS vulnerability—Fear	6 – 30	6 – 30	19.8	6.6
Perceived AIDS vulnerability—Anxiety	5 – 25	5 – 25	13.8	5.2
Perceived likelihood of future HIV infection	1 – 5	1 – 5	1.9	.96
Positive condom attitudes	3 – 15	9 – 15	14.0	1.9
Barriers to condom use	3 – 15	3 – 15	8.7	3.8
Outcome expectancies for condom use	3 – 15	3 – 15	10.6	3.1
Connectedness to mother	10 – 50	12 – 50	39.0	7.9
Independence from maternal control	3 – 15	3 – 14	9.6	2.5
Identity exploration	16 – 80	34 – 79	52.1	7.9
Identity commitment	16 – 80	38 – 71	53.8	7.3

about condoms quite positively. As indicated in Table 5, the mean score for this variable was only one-point below the maximum possible value. Examination of the distribution indicated that adolescent responses were quite skewed. Accordingly, no further analyses with the positive condom attitudes variable were conducted. The mean score for adolescent barriers to

condom use translated to 2.9 on a 5-point scale, which indicates that adolescents were neutral, or unsure, about potential barriers to their successful use of condoms. Finally, adolescents rated their outcome expectancies for condom use as, on average, 3.5 on a 5-point scale. This indicates that the adolescents were somewhat confident that condoms can protect them from pregnancy and STIs.

Adolescent sexual behavior. Of the 52 adolescents participating in the study, only 15 reported ever having sexual intercourse. Among these 15 adolescents, the average age of first intercourse was 15.0 (SD = 1.0). More than half (53%) had their first intercourse experience with a partner they had been “dating for a long time.” One-fifth reported their first sexual partner as someone they were “seriously dating,” and another fifth reported their first partner as someone they had “just met.” A large majority (80%) reported using a condom and not drinking alcohol before or during their first sexual intercourse experience. Regarding their most recent sexual intercourse experience, two-thirds of the nonvirgins in the sample indicated that their partner was the same partner with whom they had intercourse the first time, 13% identified their partner at most recent intercourse as someone they were “seriously dating,” and another 13% reported that it was someone they had been “dating for a long time.” The overwhelming majority (93%) reported that they did not drink alcohol before or during their most recent sexual intercourse experience, and that they used a condom (80%). These adolescents reported an average of approximately two sexual partners in the last three months (M = 1.6, SD = 0.6, Range: 1 - 3), and slightly more over their lifetimes (M = 1.8, SD = 1.5, Range: 1 - 6). Because such a small proportion of the sample reported having had sexual intercourse, it was not possible to include sexual risk behaviors in the regression analyses.

Adolescent individuation. As indicated in Table 5, adolescents' average rating of their connectedness to their mothers was 3.9 on a 5-point scale. This indicates that, on average, adolescents were strongly emotionally connected to their mothers. The mean score for adolescent independence from maternal control translates to a rating of 3.2 on a 5-point scale, indicating that on average, the adolescents felt moderately independent from their mothers' control.

Adolescent identity development. Means, standard deviations, and ranges for adolescent identity exploration and commitment are presented in Table 5. As indicated, the mean score for adolescent identity exploration was 3.3 on a 6-point scale. This score indicates that, on average, the adolescents in the sample had engaged in moderate amounts of identity exploration. Adolescent ratings of their identity commitment were, on average, 3.4 on a 6-point scale. The adolescents in the sample were moderately committed across identity domains.

Associations among predictor variables. Correlations were performed to assess the associations between the different measures of communication. As indicated in Table 6, mothers' observed composure was positively related to both mothers' observed receptivity and to adolescent reports of mothers' responsiveness during previous sexuality conversations. In other words, mothers who demonstrated greater composure also displayed more receptivity, and were perceived by their adolescents as highly responsive. Correlations

Table 6

Bivariate Correlations Among Predictor Variables

	Mothers' observed composure	Mothers' observed receptivity	Adolescents' perceptions of mothers' responsiveness	Communication frequency—Sexual safety	Communication frequency—Physical development	Communication frequency—Sexual feelings
Mothers' observed composure	--	.36**	.34*	-.03	.33*	.17
Mothers' observed receptivity		--	.19	-.13	.02	.00
Mothers' responsiveness			--	.05	.13	.20
Communication frequency—Sexual safety				--	.29*	.55***
Communication frequency—Physical development					--	.34*
Communication frequency—Sexual feelings						--

Note. Due to missing data, sample size ranged from $N = 47$ to 52 .

* $p < .05$; ** $p < .01$; *** $p < .001$.

among these communication quality variables ranged from .19 to .36. Given this magnitude of association, it was determined that these measures of mothers' communication were unique enough to be examined as separate variables. Mothers' communication quality was also associated with the frequency of previous sexuality communication. Specifically, adolescents whose mothers demonstrated greater composure reported more prior communication about physical development.

Adolescent reports about the frequency of sexuality communication about different issues were also related (see Table 6). Adolescents who reported more frequent conversations about physical development also reported more frequent conversations about sexual safety and sexual feelings. Further, adolescents' reports of more frequent conversations with their mothers about sexual feelings were associated with reports of more frequent conversations about sexual safety. Correlations among self-reported communication frequency variables ranged from .29 to .55. Given this magnitude of association, it was determined that these measures of sexuality communication frequency were unique enough to treat as separate variables.

Associations among outcome variables. Correlations were performed to examine the associations between the outcome variables. As indicated in Table 7, adolescent conservative sexual attitudes were associated with perceptions of the likelihood of future HIV infection, and marginally associated with fear of AIDS. Specifically, adolescents with more conservative sexual attitudes believed they were less likely to be infected with HIV in the future, and tended to be less fearful of AIDS. Conservative sexual attitudes were also associated with more perceived barriers to condom use. Adolescent fear of AIDS was associated with anxiety about AIDS such that those adolescents who expressed more fear of

Table 7

Bivariate Correlations Among Outcome Variables

	Conservative sexual attitudes	Perceived AIDS vulnerability —Fear	Perceived AIDS vulnerability —Anxiety	Perceived likelihood of future HIV infection	Barriers to condom use	Outcome expectancies for condom use
Conservative sexual attitudes	--	-.27 [^]	-.15	-.27*	.39**	-.17
Perceived AIDS vulnerability — Fear		--	.55***	.11	.05	.09
Perceived AIDS vulnerability — Anxiety			--	.22	-.27 [^]	.00
Perceived likelihood of future HIV infection				--	-.29*	.16
Barriers to condom use					--	-.01
Outcome expectancies for condom use						--

Note. Due to missing data, sample size ranged from $N = 50$ to 52 .

[^] $p < .06$; * $p < .05$; ** $p < .01$; *** $p < .001$.

AIDS also reported higher anxiety concerning AIDS. Adolescent anxiety about AIDS was marginally associated with perceiving fewer barriers to condom use. Finally, adolescents who believed they were more likely to be infected with HIV in the future perceived fewer barriers to condom use. Correlations among the outcome variables ranged from $-.29$ to $.55$. Given this magnitude of association, it was determined that the measures of sexual attitudes were unique enough to be examined separately.

Gender and Virginitly Status Group Differences

The associations between gender and virginitly status were examined. Chi-square analysis indicated that males and females were equally likely to be virgins or nonvirgins, $X^2(1, 52) = .21, p > .05$. Of the male adolescents, 67% were virgins, and of the females, 73% were virgins.

In order to assess gender differences on the predictor, outcome and mediator variables, a series of independent groups t -tests were performed (see Table 8). Only one significant difference was found. Specifically, mothers of male adolescents were coded as significantly more receptive during the videotaped sexuality conversation than mothers of female adolescents.

To assess group differences on the predictor, outcome and mediator variables by virginitly status, a series of independent groups t -tests were conducted (see Table 8). Several differences were found between those adolescents who reported being virgins and those who reported that they were not virgins. First, those adolescents who reported that they were virgins indicated that their mothers were more responsive during previous sexuality conversations than did those adolescents who were not virgins. Second, the virgins' mothers were rated as marginally more receptive than the nonvirgins' mothers during the videotaped

Table 8

Gender and Virginitly Status Group Differences on Predictor, Outcome, and Mediator Variables

Variable	Gender					Virginitly Status				
	Males N = 15		Females N = 37		t	Virgins N = 37		Nonvirgins N = 15		t
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>		<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Observer report										
Mothers' composure	35.0	5.8	37.0	5.9	1.09	37.1	5.6	34.6	6.5	1.37
Mothers' receptivity	11.1	1.2	10.1	2.0	2.01*	10.7	1.7	9.7	1.9	1.75^
Adolescent report										
Mothers' responsiveness	28.9	5.4	30.0	7.8	.48	31.0	6.7	26.5	7.4	2.14*
Conservative sexual attitudes	40.9	9.3	45.3	12.4	1.25	45.2	12.2	41.3	10.3	1.09
Perceived AIDS vulnerability—Fear	20.0	4.8	19.8	7.2	.13	19.4	6.8	20.9	6.1	.75
Perceived AIDS vulnerability—Anxiety	12.1	4.4	14.6	5.4	1.60	13.0	5.0	15.9	5.2	1.83^
Perceived likelihood of future HIV infection	2.0	0.8	1.8	1.0	.55	1.7	0.8	2.3	1.2	1.87^
Barriers to condom use	8.5	4.5	8.8	3.6	.21	9.7	3.6	6.4	3.4	2.98**
Outcome expectancies for condom use	11.5	2.6	10.2	3.2	1.42	10.2	3.0	11.5	3.2	1.32
Connectedness to mother	39.3	4.8	38.8	8.9	.18	39.4	8.6	38.0	6.1	.56
Independence from maternal control	9.7	2.1	9.5	2.7	.32	9.4	2.6	9.9	2.4	.68
Identity exploration	51.3	6.0	52.4	8.6	.47	52.3	8.4	51.5	6.8	.35
Identity commitment	52.4	6.5	54.4	7.7	.92	53.8	8.3	53.9	4.4	.03

^ p < .10; * p < .05; ** p < .01.

sexuality conversation. Third, virgins reported marginally lower levels of perceived vulnerability to AIDS. Specifically, virgins were less anxious about AIDS than were nonvirgins, and believed they were less likely to be infected with HIV in the future than did nonvirgins. Finally, those adolescents who were virgins indicated that they perceived more barriers to condom use than did the nonvirgins.

Although few gender and virginity status differences were found, previous research suggests that males and females hold different attitudes about sexual issues (e.g., Gfellner, 1988; Oliver & Hyde, 1993), and have different interaction patterns with their mothers (e.g., Lefkowitz et al., 2002). Ideally, analyses would have been conducted on the gender and virginity status subgroups to identify group differences in associations. Unfortunately, the distribution of females and males (37 and 15, respectively), and virgins and nonvirgins (37 and 15, respectively) precluded conducting reliable group comparisons. It was important, however, to assess the extent to which the subgroups differed to determine the appropriateness of analyzing the sample as a whole without examining the subgroups individually. To do so, the bivariate correlations and regressions used to test the hypotheses were performed on the sample as a whole, separately on the female adolescents, and separately on the virgin adolescents. The correlation and regression coefficients were then examined for differences in sign and magnitude between the whole sample and the females, and between the whole sample and the virgins. No sign differences were found and the differences in magnitude of correlation and regression coefficients were negligible. Accordingly, it was determined that conducting hypothesis tests on the sample as a whole was appropriate.

Mother-Adolescent Sexuality Communication Patterns

The first aim of the study was to identify patterns of mother-adolescent sexuality communication. In order to identify these patterns of communication, a cluster analysis was performed. The goal was to group the mother-adolescent dyads, and to develop profiles of sexuality communication among the dyads in the study. A cluster analysis, with between-groups (average) linkage, was conducted on the following variables: mothers' observed composure, mothers' observed receptivity, adolescent perceptions of mothers' responsiveness during previous sexuality conversations, adolescent reports of communication frequency about sexual safety, communication frequency about physical development, and communication frequency about sexual feelings. The cluster analysis successfully grouped 47 of the dyads into two groups. As illustrated in Table 9, the groups were named Quality Communicators ($N = 27$) and Quantity Communicators ($N = 20$). In general, the Quantity Communicators reported more frequent sexuality communication than did the other group. The adolescents in this group reported significantly more frequent mother-adolescent discussions about sexual safety, physical development, and sexual feelings than did the adolescents in the Quality Communicators group (see Table 9). In contrast, the Quality Communicators exhibited higher quality communication than did the other group. The mothers in the Quality Communicators groups were rated as significantly more receptive during the observed sexuality conversation than were the mothers in the Quantity Communicators group. Although the group differences on the other quality measures of communication were not significant, they followed the same pattern, with mothers in the Quality Communicators group rated as more composed by the coders and as more responsive by their adolescents than the mothers in the Quantity Communicators group.

Table 9

Cluster Group Differences on Communication Variables

Variable	Quantity Communicators N = 20		Quality Communicators N = 27		t
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Mothers' observed composure	34.6	6.9	37.3	5.0	1.61
Mothers' observed receptivity	9.3	1.8	11.1	1.4	3.82**
Adolescents' perceptions of mothers' responsiveness	28.0	7.7	30.5	6.3	1.23
Communication frequency—Sexual safety	10.2	3.7	4.6	3.1	5.58***
Communication frequency—Physical development	4.5	1.3	3.3	2.2	2.21*
Communication frequency—Sexual feelings	7.0	4.0	2.1	2.2	4.93***

* $p < .05$; ** $p < .01$; *** $p < .001$.

Chi-square analyses were conducted to assess group differences between the communication groups and adolescent gender and virginity status. Chi-square analysis revealed that the adolescents in the Quantity Communicators group were marginally more likely to be nonvirgins than were the adolescents in the Quality Communicators group, $\chi^2(1, 47) = 2.65$, $p = .10$. In the Quantity Communicators group, 60% of the adolescents were virgins, and in the Quality Communicators group, 82% were virgins. No significant group differences were found, however, in the gender composition of the communication groups,

$X^2(1, 47) = 2.28, p = .13$, although the magnitude of the difference was similar to that found in the comparison of virgins to nonvirgins. In the Quantity Communicators group, 20% of the adolescents were male, and in the Quality Communicators group, 41% were male.

Finally, independent groups t -tests were performed to examine group differences on the outcome and mediator variables. Two differences were found between the communication clusters. First, adolescents in the Quantity Communicators group ($M = 16.9, SD = 4.9$) reported more anxiety about AIDS than did adolescents in the Quality Communicators group ($M = 12.4, SD = 4.3$), $t(45) = 3.31, p < .01$. In addition, adolescents in the Quantity Communicators group ($M = 55.0, SD = 8.0$) had engaged in marginally more identity exploration than the adolescents in the Quality Communicators group ($M = 51.0, SD = 7.5$), $t(45) = 1.75, p = .09$.

Mother-Adolescent Sexuality Communication and Adolescent Sexual Attitudes

The second aim of the study was to use observational methods to examine mothers' communication quality during sexuality conversations, and to explore the associations between mothers' communication quality and adolescent sexual attitudes. In the first hypothesis, it was predicted that mothers' observed communication behaviors would relate to adolescents' sexual attitudes. Bivariate Pearson correlations were performed to test this hypothesis (see Table 10). Four of the six correlations for receptivity were significant or marginally significant. Specifically, mothers who displayed more receptivity had adolescents who reported less fear and less anxiety about AIDS. In addition, adolescents whose mothers were more receptive when discussing sexuality were marginally less likely to believe they

Table 10

Bivariate Correlations Between Mothers' Communication and Adolescent SexualAttitudes

	Mothers' observed sexuality communication		Adolescents' perceptions of mothers' responsiveness
	Composure	Receptivity	
Conservative sexual attitudes	.03	-.07	.14
Perceived AIDS vulnerability—Fear	.05	-.28*	-.07
Perceived AIDS vulnerability—Anxiety	.10	-.36*	-.15
Perceived likelihood of future HIV infection	.01	-.24 [^]	-.30*
Barriers to condom use	.19	.27 [^]	.05
Outcome expectancies for condom use	-.02	.20	-.30*

Note. Due to missing data, sample size ranged from $N = 49$ to 52 .

[^] $p < .10$; * $p < .05$

would be infected with AIDS in the future. Finally, mothers' observed receptivity was marginally related to adolescents' perceived barriers to condom use, such that mothers who displayed more receptivity had adolescents who believed there were more barriers to their successful use of condoms. In contrast, none of the correlations between sexual attitudes and mothers' composure were significant. In summary, although mothers' observed receptivity was associated with adolescent anxiety about AIDS, perceived likelihood of future HIV infection, and barriers to condom use, these associations were in the direction opposite of that predicted.

The third aim of the study was to examine adolescents' perceptions of their mothers' responsiveness, and to explore the associations between those perceptions and adolescent sexual attitudes. In the second hypothesis, it was predicted that adolescents' reports of their mothers' responsiveness during previous sexuality conversations would be associated with adolescents' sexual attitudes. To test this hypothesis, bivariate Pearson correlations were performed (see Table 10). Two of the six correlations tested were significant. Specifically, adolescents who reported that their mothers were highly responsive during previous sexuality conversations believed they were less likely to be infected with HIV in the future. Adolescents' reports of mothers' responsiveness also related to adolescents' expectations for the preventive abilities of condoms, such that those adolescents who perceived their mothers as more responsive when talking about sexuality also reported weaker beliefs that condoms can protect them from pregnancy and STIs. In summary, although adolescents' reports of their mothers' responsiveness during previous sexuality conversations were associated with adolescents' perceived likelihood of future HIV infection and outcome expectancies for condom use, the associations found were in the direction opposite of that predicted.

Adolescent Individuation

The fourth aim of the current study was to examine adolescent individuation as it relates to the associations between mother-adolescent sexuality communication and adolescent sexual attitudes. The third hypothesis predicted that mothers' observed sexuality communication would relate to adolescents' individuation. Specifically, it was expected that when mothers exhibited composure and receptivity, their adolescents would report greater emotional connectedness to their mothers and independence from maternal control. Bivariate

Pearson correlations were performed to test this hypothesis. As indicated in Table 11, mothers who displayed more composure had adolescents who tended to report feeling more emotionally connected to their mothers. Mothers' observed composure was not associated with adolescent independence from maternal control. Further, mothers' receptivity was not significantly associated with either measure of adolescent individuation. In summary, only partial support was found for this hypothesis.

Table 11

Bivariate Correlations Between Mothers' Communication and Adolescent Individuation

	Mothers' observed sexuality communication		Adolescents' perceptions of mothers' responsiveness
	Composure	Receptivity	
Connectedness to mother	.32*	.16	.66***
Independence from maternal control	.06	.04	.37**

Note. Due to missing data, sample size ranged from $N = 49$ to 52.

* $p < .05$; ** $p < .01$; *** $p < .001$

In the fourth hypothesis, it was predicted that adolescents' perceptions of their mothers' responsiveness during previous sexuality conversations would relate to adolescents' individuation. To test this hypothesis, bivariate Pearson correlations were performed (see Table 11). Adolescents' perceptions of their mothers' responsiveness during previous sexuality conversations were significantly related to adolescent individuation. Specifically, adolescents who perceived their mothers as responsive during previous sexuality

conversations reported feeling more emotionally connected to their mothers, and reported greater independence from maternal control. In summary, this hypothesis was supported.

The fifth hypothesis predicted that adolescent individuation would relate to adolescent sexual attitudes. Bivariate Pearson correlations were performed to test this hypothesis. As indicated in Table 12, this hypothesis was not supported. Adolescent connectedness to mother and independence from maternal control were not significantly associated with adolescent sexual attitudes. In summary, this hypothesis was not supported.

Table 12

Bivariate Correlations Between Adolescent Individuation and Adolescent Sexual Attitudes

	Adolescent individuation	
	Connectedness	Independence from maternal control
Conservative sexual attitudes	-.01	-.13
Perceived AIDS vulnerability— Fear	.00	-.06
Perceived AIDS vulnerability— Anxiety	.00	-.19
Perceived likelihood of future HIV infection	-.01	-.10
Barriers to condom use	-.04	-.15
Outcome expectancies for condom use	-.15	-.02

Note. Due to missing data, sample size ranged from N = 51 to 52.

Adolescent Individuation as a Mediator Between Mother-Adolescent
Sexuality Communication and Adolescent Sexual Attitudes

Mothers' Observed Composure

As part of the fourth aim of the study, Hypothesis 6a predicted that adolescent individuation would mediate the associations between mothers' observed composure and adolescent sexual attitudes. For the analyses, the components of adolescent individuation—connectedness to mother and independence from maternal control—were treated as separate variables and tested in separate mediational models. To test the mediational role of adolescent connectedness to mother (independence from maternal control), the procedures outlined by Baron and Kenny (1986) were followed. For each outcome variable, three regression equations were estimated. The first equation regressed the outcome variable (e.g., conservative sexual attitudes) onto mothers' observed composure. In the second equation, adolescent connectedness to mother (independence from maternal control) was regressed onto mothers' observed composure. Finally, in the third equation, the outcome variable was regressed onto both mothers' observed composure and adolescent connectedness to mother (independence from maternal control). Following Baron and Kenny (1986), mediation would be evident when (1) mothers' observed composure significantly predicted the outcome variable in the first equation; (2) mothers' observed composure significantly predicted adolescent connectedness to mother (independence from maternal control) in the second equation; (3) adolescent connectedness to mother (independence from maternal control) significantly predicted the outcome variable in the third equation; and (4) the effect of mothers' observed composure on the outcome variable was less in the third equation than in the first (Baron & Kenny, 1986).

Connectedness to mother. Adolescent connectedness to mother was not found to mediate the associations between mothers' observed composure and the outcome variables. As shown in Table 10, none of the sexual attitude measures were significantly associated with composure. Given the absence of direct associations between mothers' composure and the outcome variables, the first criterion for mediation was not met, and therefore, the second and third equations for assessing mediation were not estimated.

Independence from maternal control. The associations between mothers' observed composure and the outcome variables were not mediated by adolescent independence from maternal control. As indicated in Table 10, mothers' observed composure was not significantly associated with any of the sexual attitude measures. Given the absence of direct associations between mothers' composure and the outcome variables, the first criterion for mediation was not met, and therefore, the second and third equations for assessing mediation were not estimated. In summary, adolescent individuation did not mediate the associations between mothers' observed composure and adolescent sexual attitudes.

Mothers' Observed Receptivity

In the second part of Hypothesis 6a, it was predicted that adolescent individuation would mediate the associations between mothers' observed receptivity and adolescent sexual attitudes. For the analyses, the components of adolescent individuation—connectedness to mother and independence from maternal control—were treated as separate variables and tested in separate mediational models. To test the mediational role of adolescent individuation, the procedures outlined by Baron and Kenny (1986) were followed.

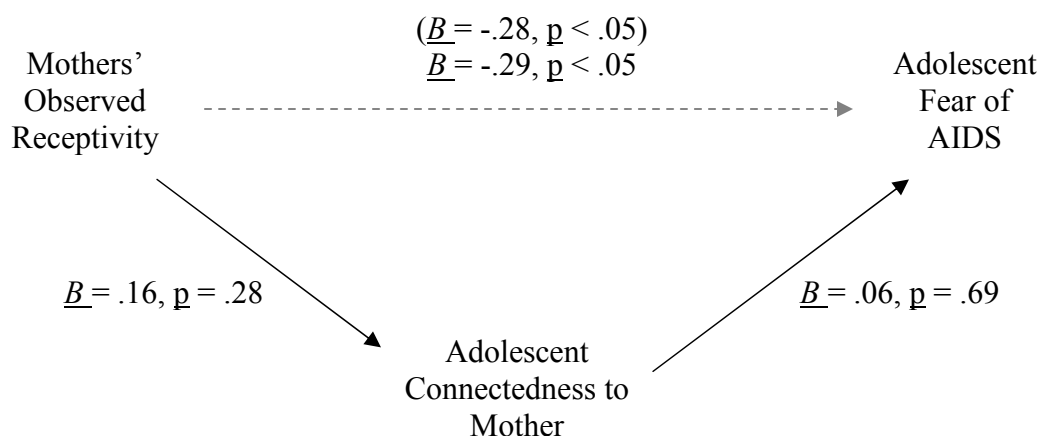
Connectedness to mother. Adolescent connectedness to mother did not mediate the associations between mothers' observed receptivity and adolescent sexual attitudes.

Specifically, for conservative sexual attitudes and outcome expectancies for condom use, receptivity was not a significant predictor (see Table 10). Therefore, the first criterion for mediation was not met for these outcome variables, and the second and third equations for assessing mediation were not estimated.

Adolescent fear of AIDS was the first sexual attitude significantly predicted by mothers' receptivity (see Figure 3). Those mothers who were rated as highly receptive had

Figure 3

Test of Adolescent Connectedness to Mother as Mediator of Association Between Mothers' Observed Receptivity and Adolescent Fear of AIDS



Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent fear of AIDS. $\underline{R}^2 = .08, p = .14$ in final model.

adolescents who reported less fear of AIDS. In the second equation, mothers' observed receptivity did not significantly predict adolescent connectedness to mother. Given the

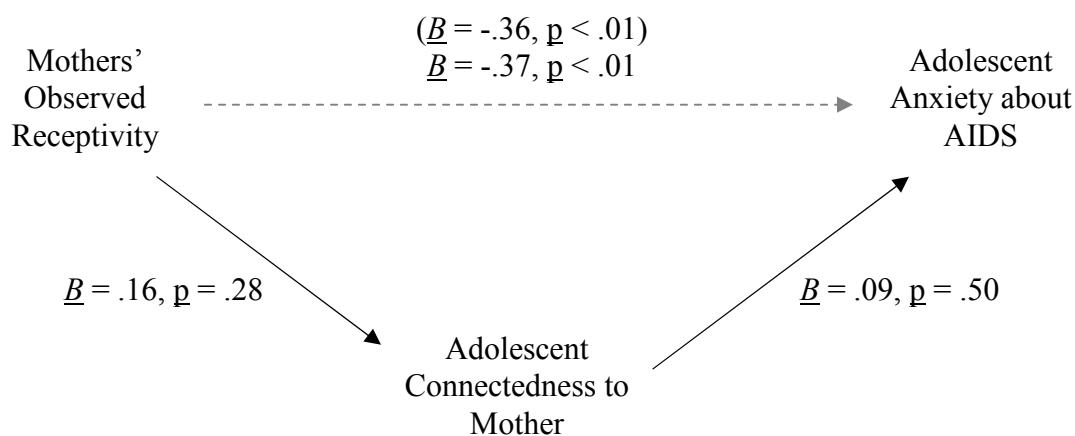
absence of a significant association between the predictor and the mediator in the second equation, the mediated hypothesis was not supported.

The second variable significantly predicted by mothers' receptivity was adolescent anxiety about AIDS (see Figure 4). Adolescents whose mothers were rated as highly receptive reported less anxiety about AIDS. As described above, in the second equation, mothers' observed receptivity did not relate significantly to adolescent connectedness to mother. Because the association between the predictor and the mediator in the second equation was not significant, the mediated hypothesis was not supported.

Figure 4

Test of Adolescent Connectedness to Mother as Mediator of Association Between Mothers'

Observed Receptivity and Adolescent Anxiety about AIDS

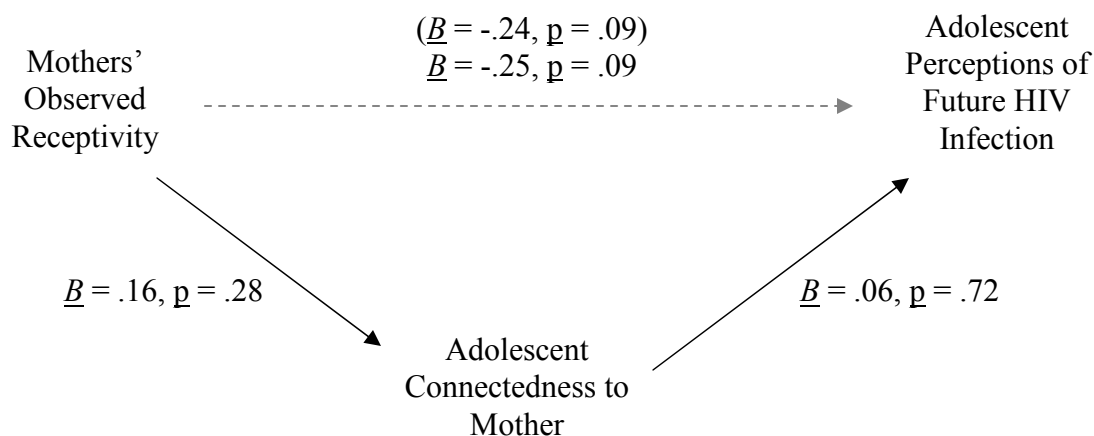


Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent anxiety about AIDS. $R^2 = .14, p < .05$ in final model.

Adolescent perceptions of the likelihood of future HIV infection was the third variable to be significantly predicted by mothers' receptivity, although only marginally (see Figure 5). Mothers who demonstrated more receptivity had adolescents who tended to believe they were at less risk for future HIV infection. Mothers' observed receptivity did not significantly predict adolescent connectedness to mother in the second equation. Given the absence of a significant association between the predictor and the mediator in the second equation, the mediated hypothesis was not supported.

Figure 5

Test of Adolescent Connectedness to Mother as Mediator of Association Between Mothers' Observed Receptivity and Adolescent Perceptions of the Likelihood of Future HIV Infection

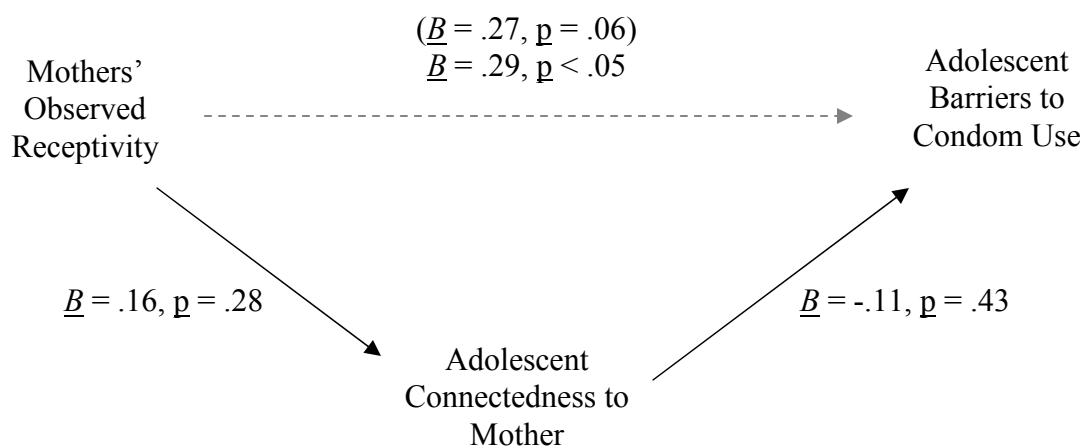


Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent perceptions of the likelihood of future HIV infection. $\underline{R}^2 = .06$, $p = .23$ in final model.

The final variable predicted by mothers' observed receptivity was adolescent perceptions of barriers to condom use (see Figure 6). Adolescents whose mothers displayed more receptivity tended to perceive more barriers to condom use. As described above, in the second equation, mothers' observed receptivity did not relate significantly to adolescent connectedness to mother. Because the association between the predictor and the mediator in the second equation was not significant, the mediated hypothesis was not supported. In summary, the hypothesis that adolescent connectedness to mother would mediate the associations between mothers' observed receptivity and adolescent sexual attitudes was not supported.

Figure 6

Test of Adolescent Connectedness to Mother as Mediator of Association Between Mothers' Observed Receptivity and Adolescent Perceptions of Barriers to Condom Use



Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent barriers to condom use. $\underline{R}^2 = .09, p = .12$ in final model.

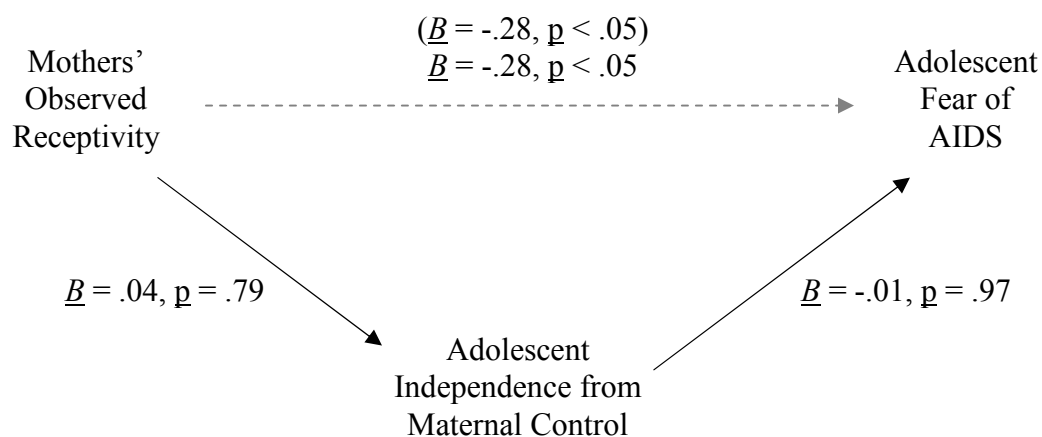
Independence from maternal control. The associations between mothers' observed receptivity and adolescent sexual attitudes were not mediated by adolescent independence from maternal control. Specifically, mothers' receptivity was not a significant predictor of conservative sexual attitudes and outcome expectancies for condom use (see Table 10). Therefore, the first criterion for mediation was not met for these outcome variables; thus, the second and third equations for assessing mediation were not estimated..

The first variable significantly predicted by mothers' receptivity was adolescent fear of AIDS (see Figure 7). Those mothers who displayed more receptivity had adolescents who reported less fear of AIDS. In the second equation, mothers' observed receptivity did not significantly predict adolescent independence from maternal control. Given the absence of a

Figure 7

Test of Adolescent Independence from Maternal Control as Mediator of Association

Between Mothers' Observed Receptivity and Adolescent Fear of AIDS



Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent fear of AIDS. $R^2 = .08$, $p = .15$ in final model.

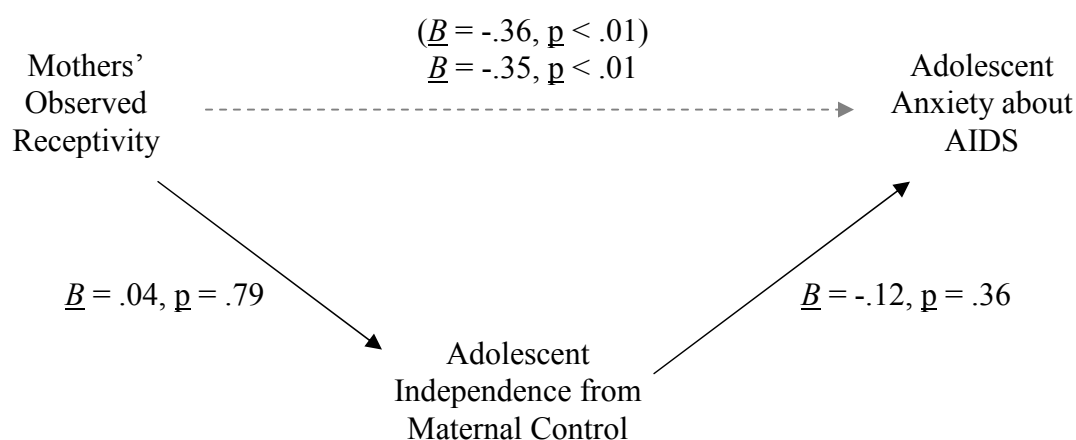
significant association between the predictor and the mediator in the second equation, the mediated hypothesis was not supported.

Adolescent anxiety about AIDS was the second outcome variable significantly predicted by mothers' observed receptivity (see Figure 8). Adolescents whose mothers were rated as highly receptive reported less anxiety about AIDS. Mothers' receptivity did not significantly predict adolescent independence from maternal control in the second equation. Because the association between the predictor and the mediator in the second equation was not significant, the mediated hypothesis was not supported.

Figure 8

Test of Adolescent Independence from Maternal Control as Mediator of Association

Between Mothers' Observed Receptivity and Adolescent Anxiety About AIDS



Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent anxiety about AIDS. $\underline{R}^2 = .14, p < .05$ in final model.

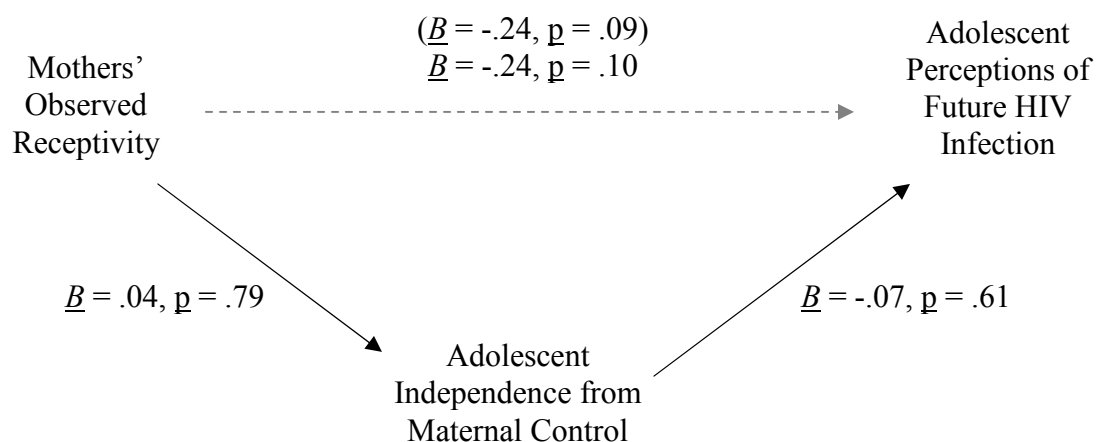
Adolescent perceptions of the likelihood of future HIV infection was the third variable predicted by mothers' receptivity, although only marginally (see Figure 9). Those mothers who demonstrated greater receptivity had adolescents who tended to believe they were at less risk for future HIV infection. In the second equation, mothers' receptivity did not significantly predict adolescent independence from maternal control. Given the absence of a significant association between the predictor and the mediator in the second equation, the mediated hypothesis was not supported.

Figure 9

Test of Adolescent Independence from Maternal Control as Mediator of Association

Between Mothers' Observed Receptivity and Adolescent Perceptions of the Likelihood of

Future HIV Infection

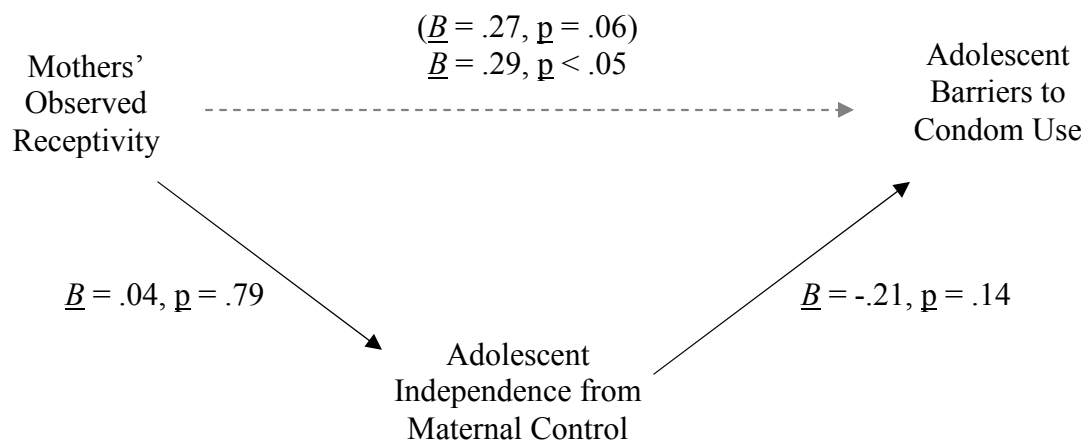


Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent perceptions of the likelihood of future HIV infection. $R^2 = .06, p = .22$ in final model.

Finally, mothers' receptivity was marginally predictive of adolescent perceptions of barriers to condom use (see Figure 10). Adolescents whose mothers were rated as highly receptive tended to perceive more barriers to condom use. Mothers' receptivity did not significantly predict adolescent independence from maternal control in the second equation. Given the absence of a significant association between the predictor and the mediator in the second equation, the mediated hypothesis was not supported. In summary, the hypothesis that adolescent independence from maternal control would mediate the associations between mothers' observed receptivity and adolescent sexual attitudes was not supported.

Figure 10

Test of Adolescent Independence from Maternal Control as Mediator of Association
Between Mothers' Observed Receptivity and Adolescent Perceptions of Barriers to Condom
Use



Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent barriers to condom use. $\underline{R}^2 = .12, p = .06$ in final model.

Adolescent Reports of Mothers' Communication

As part of the fourth aim, Hypothesis 6b predicted that adolescent individuation would mediate the associations between adolescents' reports of mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes. For the analyses, the components of adolescent individuation—connectedness to mother and independence from maternal control—were treated as separate variables and tested in separate mediational models. To test the mediational role of connectedness to mother (independence from maternal control), the procedures outlined by Baron and Kenny (1986) were followed.

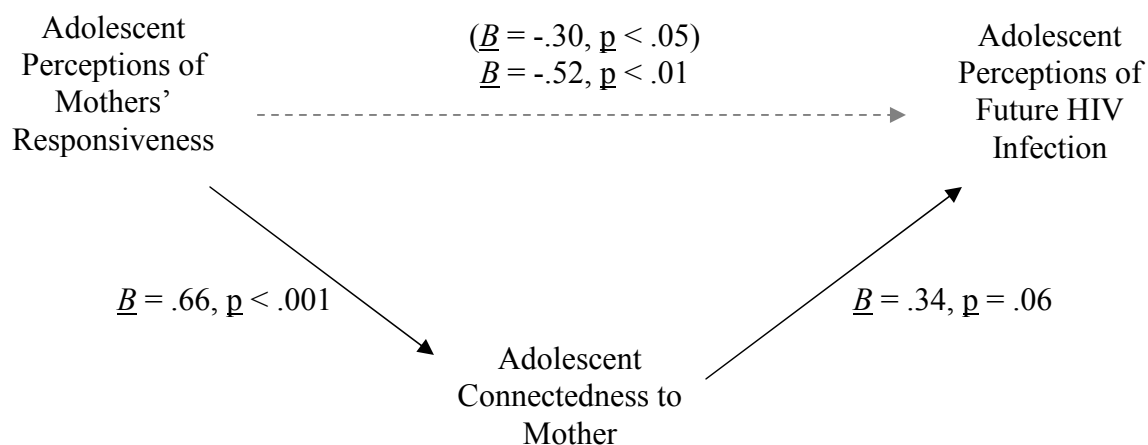
Connectedness to mother. Adolescent connectedness to mother did not mediate the associations between adolescents' perceptions of mothers' responsiveness and adolescent sexual attitudes. Specifically, for conservative sexual attitudes, fear of AIDS, anxiety about AIDS, and barriers to condom use, mothers' responsiveness was not a significant predictor (see Table 10). Therefore, the first criterion for mediation was not met for these outcome variables, and thus, the second and third equations for assessing mediation were not estimated.

Adolescent perceptions of mothers' responsiveness significantly predicted adolescent perceptions of the likelihood of future HIV infection (see Figure 11). Adolescents who perceived their mothers as more responsive believed they were less likely to be infected with HIV in the future. In the second equation, adolescents' perceptions of mothers' responsiveness significantly predicted the mediator, adolescent connectedness to mother. Adolescents who rated their mothers as more responsive during previous sexuality conversations reported feeling more emotionally connected to their mothers. In the third equation, the mediator, connectedness to mother, significantly predicted adolescent

perceptions of the likelihood of future HIV infection, although only marginally. However, mothers' responsiveness was still a significant predictor of perceived likelihood of future HIV infection in the third model, and was not less in the third equation than it was in the first. Therefore, mediation was not found.

Figure 11

Test of Adolescent Connectedness to Mother as Mediator of Association Between Adolescent Perceptions of Mothers' Responsiveness and Adolescent Perceptions of the Likelihood of Future HIV Infection



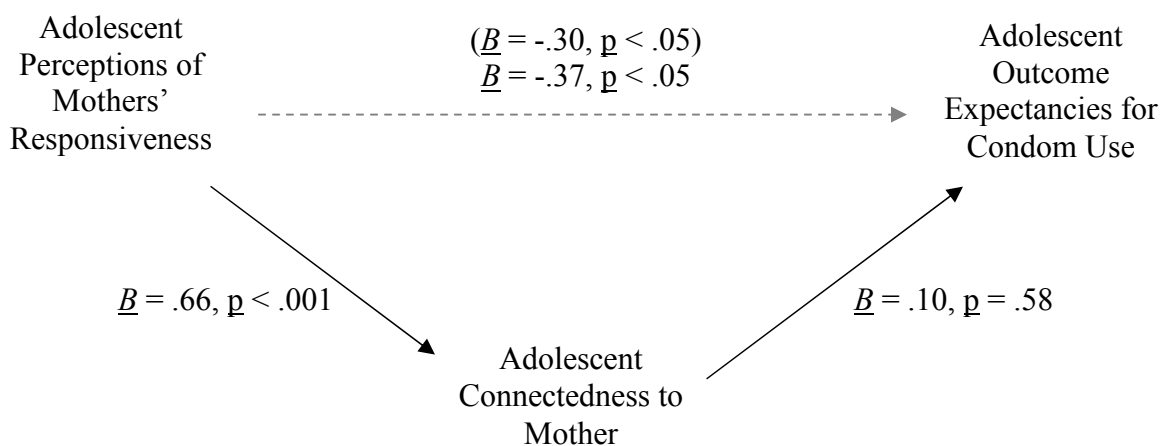
Note. Numbers in parentheses indicate the direct relation between mothers' responsiveness and adolescent perceptions of the likelihood of future HIV infection. $R^2 = .15, p < .05$ in final model.

Outcome expectancies for condom use were significantly predicted by mothers' responsiveness (see Figure 12). Adolescents who rated their mothers as more responsive had lower expectations for the protective abilities of condoms. In the second equation,

responsiveness significantly predicted the mediator, connectedness, such that adolescents who rated their mothers as more responsive during previous sexuality conversations reported feeling more emotionally connected to their mothers. However, in the third equation, adolescent connectedness to mother was not a significant predictor of outcome expectancies for condom use. Thus, the third criterion for finding mediation was not met; the mediator did not significantly predict the outcome variable. In summary, adolescent connectedness to mother did not mediate the associations between mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes.

Figure 12

Test of Adolescent Connectedness to Mother as Mediator of Association between Adolescent Perceptions of Mothers' Responsiveness and Adolescent Outcome Expectancies for Condom Use



Note. Numbers in parentheses indicate the direct relation between mothers' responsiveness and adolescent outcome expectancies for condom use. $R^2 = .10, p = .08$ in final model.

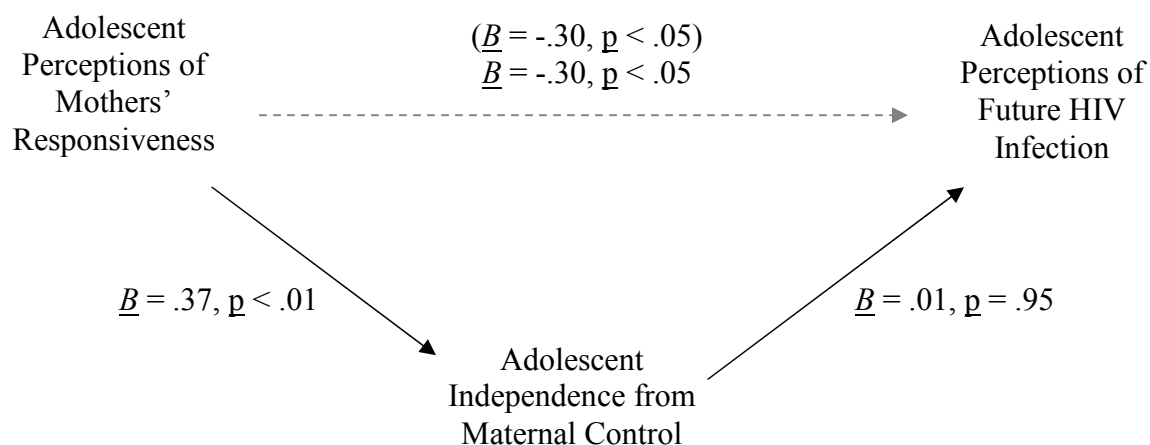
Independence from maternal control. Adolescent independence from maternal control was not found to mediate the associations between adolescents' perceptions of mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes. Mothers' responsiveness during previous sexuality conversations did not significantly predict adolescent conservative sexual attitudes, fear of AIDS, anxiety about AIDS, or barriers to condom use (see Table 10). Therefore, the criterion for the first step of mediation was not met, and thus, the second and third equations for assessing mediation were not estimated for these outcome variables.

Adolescents' perceptions of the likelihood of future HIV infection were significantly predicted by mothers' responsiveness (see Figure 13). Adolescents who rated their mothers as more responsive believed they were less likely to be infected with HIV in the future. In the second equation, responsiveness significantly predicted the mediator, independence from maternal control, such that adolescents who rated their mothers as more responsive during previous sexuality conversations reported feeling more independent from their mothers' control. However, in the third equation, adolescent independence from maternal control was not a significant predictor of perceived likelihood of future HIV infection. Thus, the third criterion for finding mediation was not met; the mediator did not significantly predict the outcome variable. Therefore, mediation was not found.

Figure 13

Test of Adolescent Independence from Maternal Control as Mediator of Association

Between Adolescent Perceptions of Mothers' Responsiveness and Adolescent Perceptions of the Likelihood of Future HIV Infection

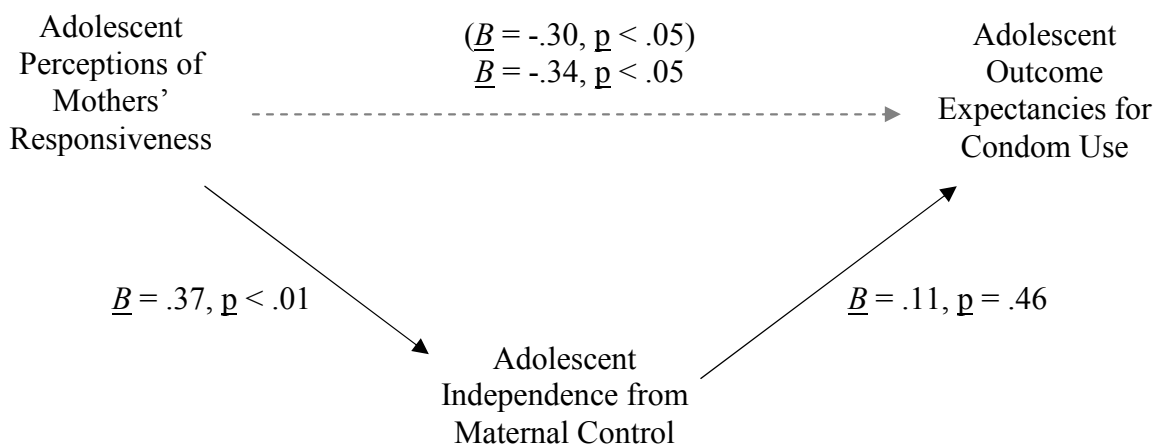


Note. Numbers in parentheses indicate the direct relation between mothers' responsiveness and adolescent perceptions of the likelihood of future HIV infection. $R^2 = .09$, $p = .10$ in final model.

Adolescents' outcome expectancies for condom use were significantly predicted by mothers' responsiveness (see Figure 14). Adolescents with more responsive mothers had lower expectations for the protective abilities of condoms. In the second equation, responsiveness significantly predicted the mediator, independence from maternal control, such that adolescents who rated their mothers as more responsive during previous sexuality conversations reported feeling more independent from their mothers' control. However, in the third equation, adolescent independence from maternal control was not a significant predictor of perceived likelihood of future HIV infection. Thus, the third criterion for finding

Figure 14

Test of Adolescent Independence from Maternal Control as Mediator of Association
Between Adolescent Perceptions of Mothers' Responsiveness and Adolescent Outcome
Expectancies for Condom Use



Note. Numbers in parentheses indicate the direct relation between mothers' responsiveness and adolescent outcome expectancies for condom use. $\underline{R}^2 = .10, p = .07$ in final model.

mediation was not met; the mediator did not significantly predict the outcome variable. Therefore, adolescent independence from maternal control did not mediate the associations between mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes. In summary, adolescent individuation did not mediate the associations between mothers' responsiveness and adolescent sexual attitudes.

Adolescent Identity Exploration and Commitment

The fifth aim of the current study was to examine adolescent identity development as it relates to the associations between mother-adolescent sexuality communication and

adolescent sexual attitudes. In the seventh hypothesis, it was predicted that mothers' observed composure and receptivity during sexuality conversations with their adolescents would be associated with adolescent identity exploration and commitment. As indicated in Table 13, this hypothesis was not supported. Mothers' observed composure and receptivity did not significantly relate to adolescent identity exploration and commitment.

The eighth hypothesis predicted that adolescents' perceptions of their mothers' responsiveness during previous sexuality conversations would be associated with adolescent identity exploration and commitment. Adolescents' perceptions of their mothers' responsiveness were positively related to adolescent identity commitment (see Table 13); those adolescents who reported that their mothers were highly responsive also reported having made more identity commitments in more domains. Responsiveness was not, however, significantly associated with adolescent identity exploration. In summary, this hypothesis received partial support.

Table 13

Bivariate Correlations Between Mothers' Communication and Adolescent Identity

Development

	Mothers' observed sexuality communication		Adolescents' perceptions of mothers' responsiveness
	Composure	Receptivity	
Exploration	-.03	-.09	-.10
Commitment	-.03	-.17	.29*

Note. Due to missing data, sample size ranged from $N = 49$ to 52.

* $p < .05$.

The ninth hypothesis predicted that adolescents' identity development would be related to their sexual attitudes. Specifically, it was expected that adolescents who have engaged in more identity exploration and who have made more identity commitments would report stronger attitudes associated with safer sex, such as more perceived fear of AIDS, and fewer barriers to condom use. As indicated in Table 14, identity commitment was significantly related to perceptions of the likelihood of future HIV infection. Adolescents who reported more identity commitments indicated that they believed they were less likely to be infected with HIV in the future. In addition, adolescents who had made more identity commitments reported lower expectancies for the protective abilities of condoms. Identity exploration was not, however, significantly associated with adolescent sexual attitudes. In

Table 14

Bivariate Correlations Between Adolescent Identity

Development and Adolescent Sexual Attitudes

	Adolescent identity development	
	Exploration	Commitment
Conservative sexual attitudes	-.13	.22
Perceived AIDS vulnerability—Fear	.06	-.10
Perceived AIDS vulnerability—Anxiety	.20	-.04
Perceived likelihood of future HIV infection	.19	-.28*
Barriers to condom use	-.11	-.01
Outcome expectancies for condom use	.00	-.31*

Note. Due to missing data, sample size ranged from N = 51 to 52.

* $p < .05$.

summary, adolescent identity commitment was significantly associated with adolescents' perceived likelihood of future HIV infection and expectations for condom use, but in the direction opposite of that predicted.

Adolescent Identity Exploration and Commitment as Mediators in
the Association Between Mother-Adolescent Sexuality Communication
and Adolescent Sexual Attitudes

Mothers' Observed Composure

As part of the fifth aim, the first part of Hypothesis 10a predicted that adolescent identity exploration and commitment would mediate the associations between mothers' observed composure during sexuality conversations and adolescent sexual attitudes. For the analyses, identity exploration and identity commitment were treated as separate variables and tested in separate mediational models. To test the mediational roles of identity exploration and commitment, the procedures outlined by Baron and Kenny (1986) were followed.

Identity exploration. Adolescent identity exploration was not found to mediate the associations between mothers' observed composure and the outcome variables. As indicated in Table 10, none of the sexual attitude measures were significantly associated with composure. Given the absence of direct associations between mothers' composure and the outcome variables, the first criterion for mediation was not met, and therefore, the second and third equations for assessing mediation were not estimated.

Identity commitment. Adolescent identity commitment was not found to mediate the associations between mothers' observed composure and the outcome variables. As indicated in Table 10, none of the sexual attitude measures were significantly associated with

composure. Because the direct associations between mothers' composure and the outcome variables were not significant, the first criterion for mediation was not met, and therefore, the second and third equations for assessing mediation were not estimated. In summary, because mothers' composure failed to significantly predict the sexual attitudes variables, the hypothesis that adolescent identity exploration and commitment would mediate the associations between mothers' composure and sexual attitudes was not supported.

Mothers' Observed Receptivity

In the second part of Hypothesis 10a, it was predicted that adolescent identity exploration and commitment would mediate the associations between mothers' observed receptivity and adolescent sexual attitudes. For the analyses, adolescent identity exploration and commitment were treated as separate variables and tested in separate mediational models. To test the mediational role of adolescent exploration and commitment, the procedures outlined by Baron and Kenny (1986) were followed.

Identity exploration. Adolescent identity exploration did not mediate the associations between mothers' observed receptivity and adolescent sexual attitudes. Specifically, for conservative sexual attitudes and outcome expectancies for condom use, receptivity was not a significant predictor (see Table 10). Therefore, the first criterion for mediation was not met for these outcome variables, and thus, the second and third equations for assessing mediation were not estimated.

The first variable significantly predicted by mothers' observed receptivity was adolescent fear of AIDS (see Figure 15). Those mothers who displayed more receptivity had adolescents who reported less fear of AIDS. In the second equation, the model predicting

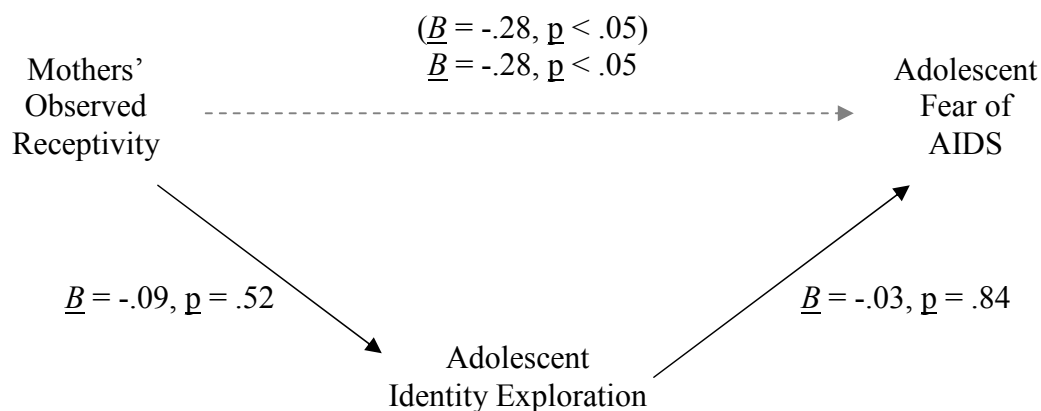
adolescent identity exploration from mothers' observed receptivity was not significant. Given the absence of a significant association between the predictor and the mediator in the second equation, the mediated hypothesis was not supported.

Adolescent anxiety about AIDS was the second variable significantly predicted by mothers' receptivity (see Figure 16). Adolescents whose mothers were rated as highly receptive reported less anxiety about AIDS. Adolescent identity exploration was not significantly predicted by mothers' receptivity in the second equation. Because the predictor and the mediator in the second equation were not significantly associated, the mediated hypothesis was not supported.

Figure 15

Test of Adolescent Identity Exploration as Mediator of Association Between Mothers'

Observed Receptivity and Adolescent Fear of AIDS

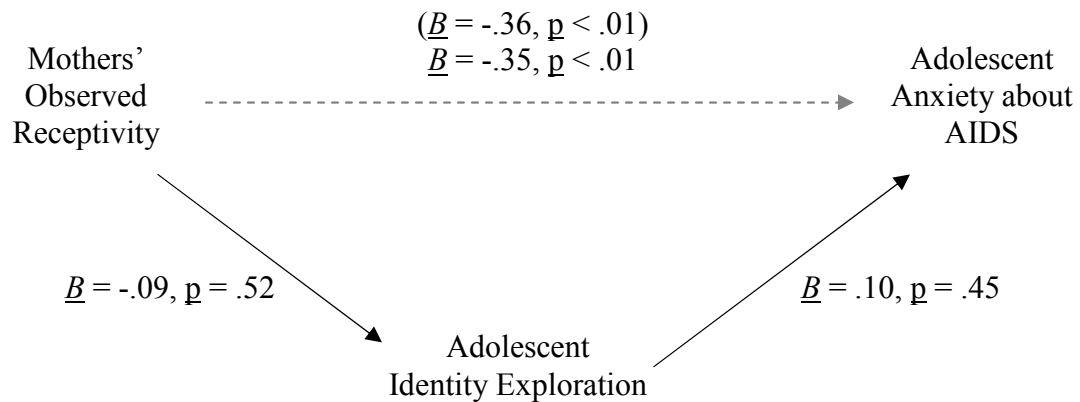


Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent fear of AIDS. $\underline{R}^2 = .08, p = .15$ in final model.

Figure 16

Test of Adolescent Identity Exploration as Mediator of Association Between Mothers' Observed Receptivity and Adolescent Anxiety About AIDS

Observed Receptivity and Adolescent Anxiety About AIDS



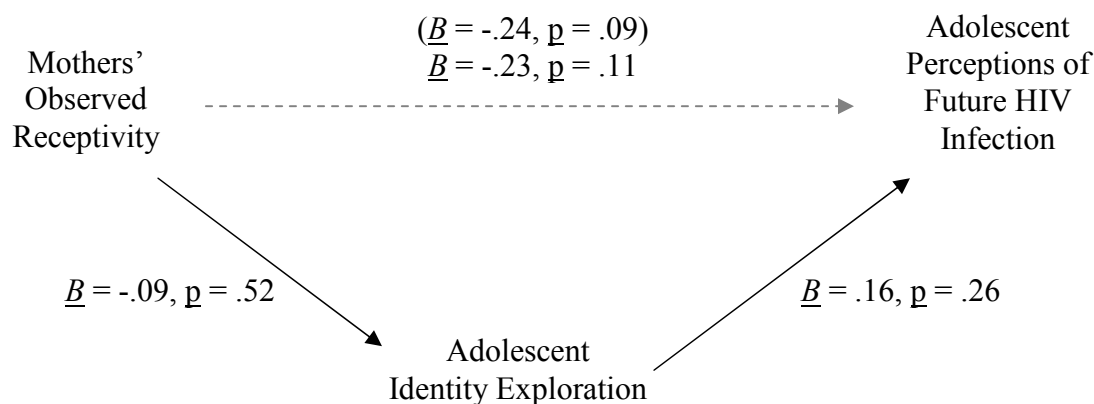
Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent anxiety about AIDS. $\underline{R}^2 = .14, p < .05$ in final model.

Adolescent perceptions of the likelihood of future HIV infection was the third variable predicted by mothers' receptivity, although this association was only marginally significant (see Figure 17). Mothers who demonstrated more receptivity had adolescents who tended to believe they were at less risk for future HIV infection. In the second equation, adolescent identity exploration was not significantly predicted by mothers' receptivity. Given the absence of a significant association between the predictor and the mediator in the second equation, the mediated hypothesis was not supported.

Figure 17

Test of Adolescent Identity Exploration as Mediator of Association Between Mothers'

Observed Receptivity and Adolescent Perceptions of the Likelihood of Future HIV Infection



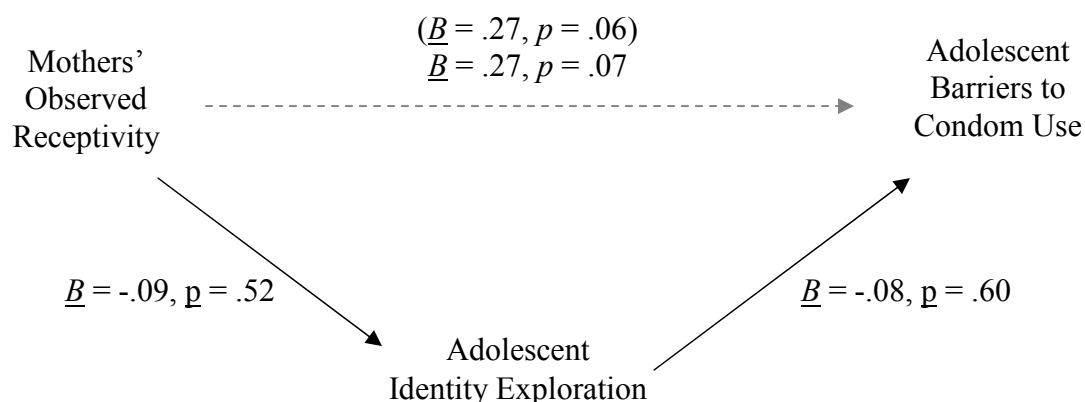
Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent perceptions of the likelihood of future HIV infection. $R^2 = .08$, $p = .13$ in final model.

Finally, adolescent perceptions of barriers to condom use were marginally predicted by mothers' receptivity (see Figure 18). Adolescents whose mothers displayed more receptivity tended to perceive more barriers to condom use. Adolescent identity exploration was not significantly predicted by mothers' receptivity in the second equation. Given the absence of a significant association between the predictor and the mediator in the second equation, the mediated hypothesis was not supported. In summary, no support was found for the hypothesis that adolescent identity exploration would mediate the associations between mothers' observed receptivity and adolescent sexual attitudes.

Figure 18

Test of Adolescent Identity Exploration as Mediator of Association Between Mothers'

Observed Receptivity and Adolescent Perceptions of Barriers to Condom Use

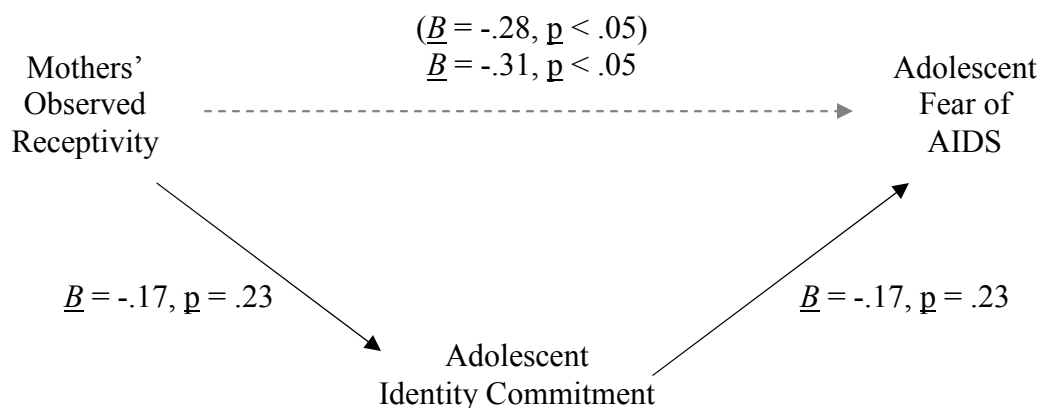


Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent barriers to condom use. $\underline{R}^2 = .08, p = .15$ in final model.

Identity commitment. The associations between mothers' observed receptivity and adolescent sexual attitudes were not mediated by adolescent identity commitment. For conservative sexual attitudes and outcome expectancies for condom use, mothers' receptivity was not a significant predictor (see Table 10). Therefore, the first criterion for mediation was not met for these outcome variables, and thus, the second and third equations for assessing mediation were not estimated.

The first outcome variable significantly predicted by mothers' observed receptivity was adolescent fear of AIDS (see Figure 19). Those mothers who displayed more receptivity had adolescents who reported less fear of AIDS. In the second equation, the model predicting

Figure 19

Test of Adolescent Identity Commitment as Mediator of Association Between Mothers' Observed Receptivity and Adolescent Fear of AIDSObserved Receptivity and Adolescent Fear of AIDS

Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent fear of AIDS. $\underline{R}^2 = .11, \underline{p} = .07$ in final model.

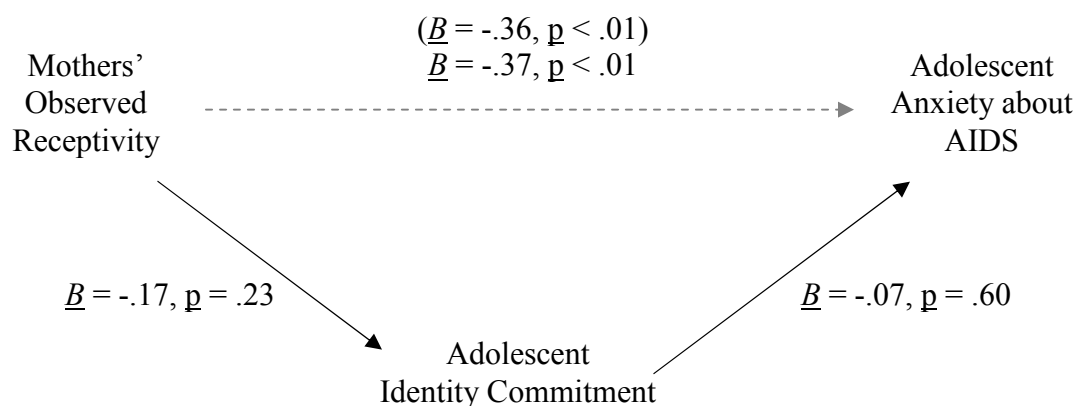
adolescent identity commitment was not significantly predicted by mothers' observed receptivity. Given the absence of a significant relation between the predictor and the mediator in the second equation, the mediated hypothesis was not supported.

Adolescent anxiety about AIDS was the second variable significantly predicted by mothers' receptivity (see Figure 20). Adolescents whose mothers were rated as highly receptive reported less anxiety about AIDS. In the second equation, adolescent identity commitment was not significantly predicted by mothers' observed receptivity. Because the predictor and the mediator were not significantly associated in the second equation, the mediated hypothesis was not supported.

Figure 20

Test of Adolescent Identity Commitment as Mediator of Association Between Mothers' Observed Receptivity and Adolescent Anxiety About AIDS

Observed Receptivity and Adolescent Anxiety About AIDS



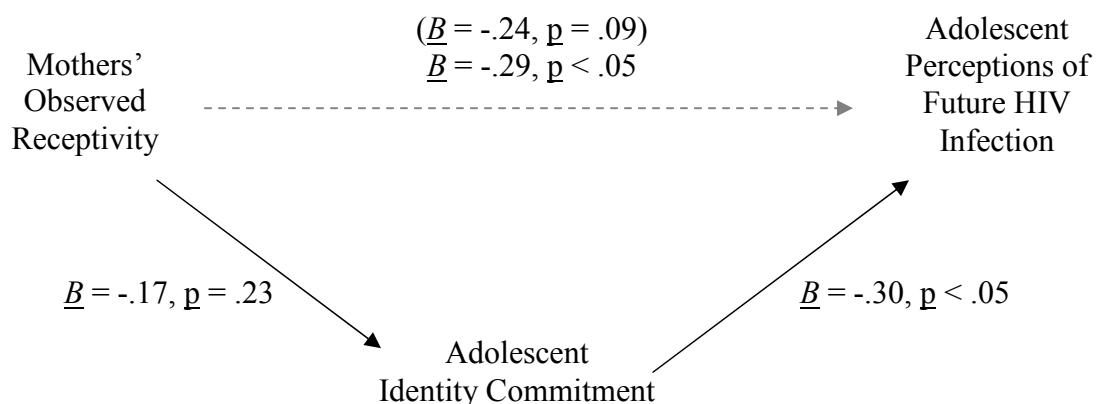
Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent anxiety about AIDS. $\underline{R}^2 = .13, p < .05$ in final model.

Adolescent perceptions of the likelihood of future HIV infection were also marginally predicted by mothers' receptivity (see Figure 21). Mothers who displayed greater receptivity had adolescents who tended to believe they were at less risk for future HIV infection. Adolescent identity commitment was not significantly predicted by mothers' observed receptivity in the second equation. Given the absence of a significant relation between the predictor and the mediator in the second equation, the mediated hypothesis was not supported.

Figure 21

Test of Adolescent Identity Commitment as Mediator of Association Between Mothers' Observed Receptivity and Adolescent Perceptions of the Likelihood of Future HIV Infection

Observed Receptivity and Adolescent Perceptions of the Likelihood of Future HIV Infection



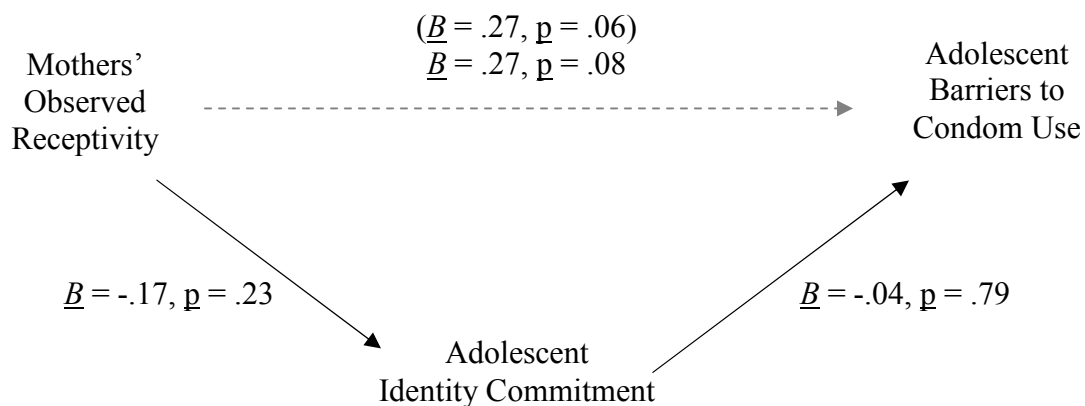
Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent perceptions of the likelihood of future HIV infection. $\underline{R}^2 = .15$, $p < .05$ in final model.

Finally, adolescent perceptions of barriers to condom use were marginally predicted by mothers' receptivity (see Figure 22). Adolescents whose mothers displayed more receptivity tended to perceive more barriers to condom use. In the second equation, adolescent identity commitment was not significantly predicted by mothers' observed receptivity. Given the absence of a significant relation between the predictor and the mediator in the second equation, the mediated hypothesis was not supported. In summary, the hypothesis that adolescent identity exploration and commitment would mediate the associations between mothers' receptivity and adolescent sexual attitudes was not supported.

Figure 22

Test of Adolescent Identity Commitment as Mediator of Association Between Mothers' Observed Receptivity and Adolescent Perceptions of Barriers to Condom Use

Observed Receptivity and Adolescent Perceptions of Barriers to Condom Use



Note. Numbers in parentheses indicate the direct relation between mothers' observed receptivity and adolescent barriers to condom use. $\underline{R}^2 = .08, \underline{p} = .16$ in final model.

Adolescent Reports of Mothers' Communication

As part of the fifth aim, Hypothesis 10b predicted that adolescent identity exploration and commitment would mediate the associations between adolescent reports of mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes. For the analyses, identity exploration and identity commitment were treated as separate variables and tested in separate mediational models. To test the mediational roles of identity exploration and commitment, the procedures outlined by Baron and Kenny (1986) were followed.

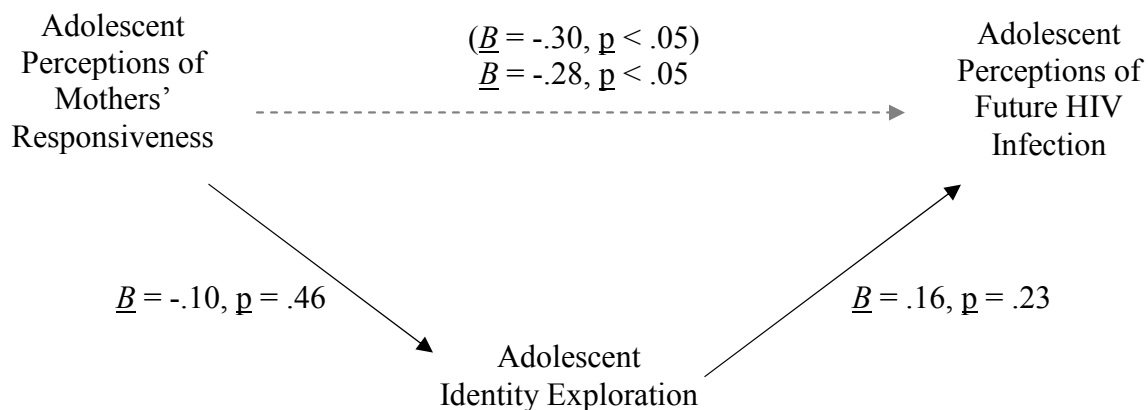
Identity exploration. The associations between adolescents' reports of mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes were not mediated by adolescent identity exploration. Specifically, for conservative sexual

attitudes, fear of AIDS, anxiety about AIDS, and barriers to condom use, mothers' responsiveness was not a significant predictor (see Table 10). Therefore, the first criterion for mediation was not met for these outcome variables, and thus, the second and third equations for assessing mediation were not estimated.

Adolescent perceptions of the likelihood of future HIV infection were significantly predicted by mothers' responsiveness (see Figure 23). Adolescents who perceived their mothers as more responsive believed they were less likely to get HIV in the future. In the second equation, mothers' responsiveness did not significantly predict adolescent identity

Figure 23

Test of Adolescent Identity Exploration as Mediator of Association Between Adolescent Perceptions of Mothers' Responsiveness and Adolescent Perceptions of the Likelihood of Future HIV Infection



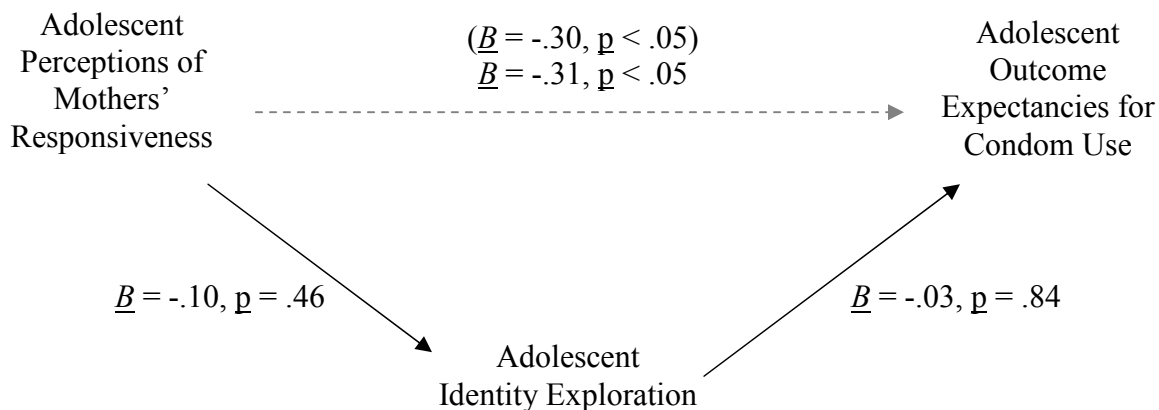
Note. Numbers in parentheses indicate the direct relation between mothers' responsiveness and adolescent perceptions of the likelihood of future HIV infection. $\underline{R}^2 = .12, p < .05$ in final model.

exploration. Because the association between the predictor and the mediator was not significant in the second equation, the mediated hypothesis was not supported.

The second variable significantly predicted by adolescents' perceptions of mothers' responsiveness was adolescent outcome expectancies for condom use (see Figure 24). Adolescents who perceived their mothers as more responsive reported lower expectations for the protective abilities of condoms. In the second equation, mothers' responsiveness did not significantly predict adolescent identity exploration. Because the association between the predictor and the mediator was not significant in the second equation, the mediated

Figure 24

Test of Adolescent Identity Exploration as Mediator of Association Between Adolescent Perceptions of Mothers' Responsiveness and Adolescent Outcome Expectancies for Condom Use



Note. Numbers in parentheses indicate the direct relation between mothers' responsiveness and adolescent outcome expectancies for condom use. $\underline{R}^2 = .09, p = .10$ in final model.

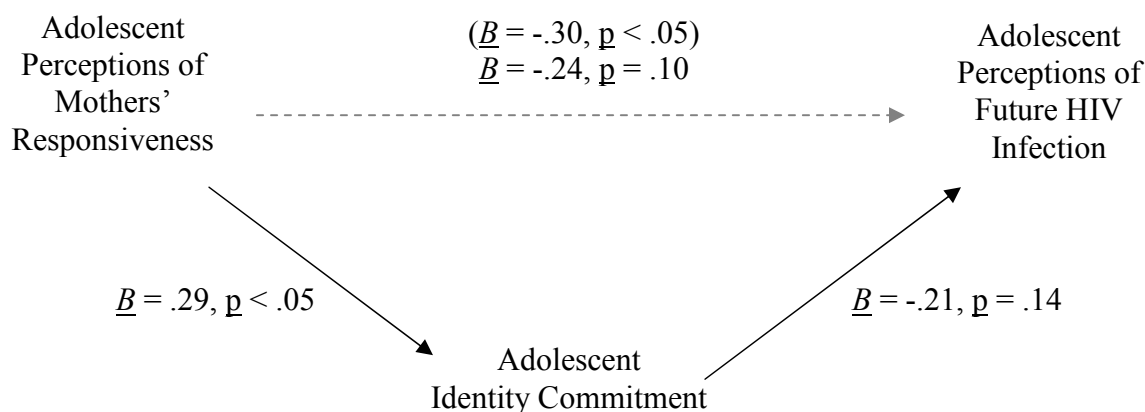
hypothesis was not supported. In summary, adolescent identity exploration did not mediate the associations between adolescents' reports of mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes.

Identity commitment. Adolescent identity commitment did not mediate the associations between mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes. Adolescents' perceptions of their mothers' responsiveness during previous sexuality conversations did not significantly predict adolescent conservative sexual attitudes, fear of AIDS, anxiety about AIDS, or barriers to condom use (see Table 10). Therefore, the first criterion for mediation was not met for these outcome variables, and thus, the second and third equations for assessing mediation were not estimated.

Adolescents' perceptions of the likelihood of future HIV infection were significantly predicted by adolescent perceptions of mothers' responsiveness (see Figure 25). Adolescents who rated their mothers as more responsive believed they were less likely to be infected with HIV in the future. In the second equation, mothers' responsiveness significantly predicted the mediator, adolescent identity commitment, such that adolescents who rated their mothers as more responsive during previous sexuality conversations reported greater identity commitment. However, in the third equation, adolescent identity commitment was not a significant predictor of perceived likelihood of future HIV infection. Because the mediator did not significantly predict the outcome variable, the third criterion for finding mediation was not met, and mediation was not found.

Figure 25

Test of Adolescent Identity Commitment as Mediator of Association Between Adolescent Perceptions of Mothers' Responsiveness and Adolescent Perceptions of the Likelihood of Future HIV Infection



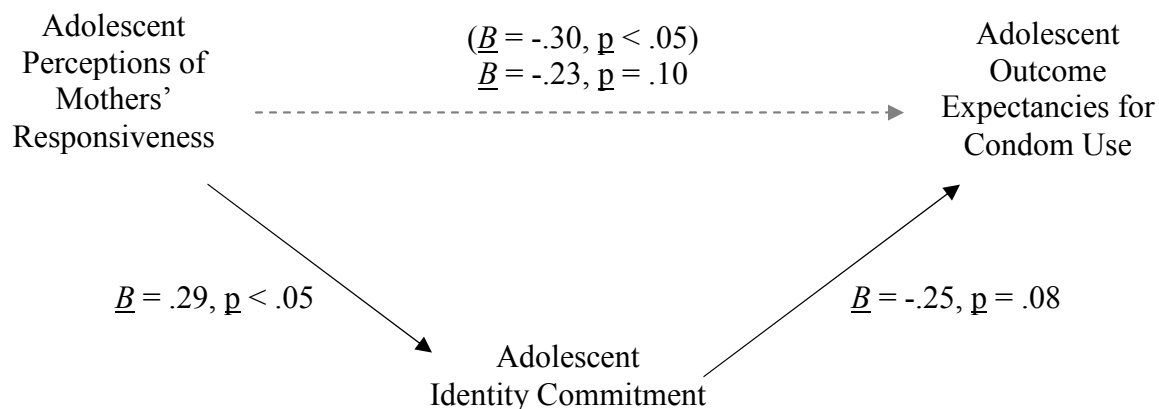
Note. Numbers in parentheses indicate the direct relation between mothers' responsiveness and adolescent perceptions of the likelihood of future HIV infection. $R^2 = .13, p < .05$ in final model.

Adolescent perceptions of mothers' responsiveness significantly predicted adolescent expectancies for condom use (see Figure 26). Adolescents who rated their mothers as more responsive had lower expectations for the protective abilities of condoms. In the second equation, adolescents' perceptions of mothers' responsiveness significantly predicted the mediator, identity commitment. Adolescents who rated their mothers as more responsive during previous sexuality conversations reported greater identity commitment. In the third equation, the mediator, identity commitment, significantly predicted outcome expectancies for condom use, although only marginally. However, mothers' responsiveness was still a marginally significant predictor of outcome expectancies for condom use in the third model,

and was not significantly less in the third equation than it was in the first. Therefore, mediation was not found. In summary, adolescent identity commitment did not mediate the associations between adolescent reports of mothers' responsiveness and adolescent sexual attitudes.

Figure 26

Test of Adolescent Identity Commitment as Mediator of Association Between Adolescent Perceptions of Mothers' Responsiveness and Adolescent Outcome Expectancies for Condom Use



Note. Numbers in parentheses indicate the direct relation between mothers' responsiveness and adolescent outcome expectancies for condom use. $R^2 = .15, p < .05$ in final model.

Additional Analyses

Because many of the original hypotheses were not supported, exploratory analyses were performed to examine patterns in the data. Although hypothesis tests for examining differences in association by gender and virginity status were not feasible with the current sample, it was important to examine how patterns of association vary for males versus

females, and for virgins versus nonvirgins in the sample. Specifically, analyses were conducted to address the question of whether boys and girls, and virgins and nonvirgins, respond differently to mothers who are highly composed, receptive, and responsive. First, each predictor and outcome variable was divided into “high” and “low” values. To determine the split-point for the variables, the same procedure was used for each variable. Scores that were equal to or higher than 75% of the possible range of the variable were considered high. This cut-point was chosen because for each of the variables in the study, 75% of the possible range theoretically reflects a high score on the measure. For instance, the range for conservative sexual attitudes was 60 points (Range: 15 – 75). Scores that were 75% of 60—45 or above—were considered strong endorsements of conservative sexual attitudes. Adolescents who scored above the 75% cut-point on perceived fear of AIDS were considered very fearful of AIDS. Similarly, adolescents who scored above the 75% cut-point on perceived anxiety about AIDS were considered very anxious about AIDS. In addition, those adolescents who scored above the 75% cut-point for perceived likelihood of future HIV infection were considered to believe strongly that they are likely to get AIDS in the future. Adolescents with scores above the 75% cut-point on barriers to condom use were those who perceived many barriers to condom use. Those adolescents who scored above the 75% cut-point on outcome expectancies for condom use were considered to have firm beliefs that condoms are protective. For each of these sexual attitudes, except barriers to condom use, those adolescents scoring above the 75% cut-point were thought of as having attitudes associated with safer sex. For barriers to condom use, those adolescents who perceived many barriers to condom use were those with attitudes not associated with safer sex.

Patterns by Gender

Mothers' observed composure. Most mothers of both boys (11 / 15 = 73%) and girls (30 / 37 = 81%) were rated as highly composed. Chi-square analysis indicated that boys and girls were equally likely to have highly composed mothers, $\chi^2(1, 52) = 1.81, p = .18$. Thus, it was feasible to examine the associations between gender and adolescent sexual attitudes for just those adolescents whose mothers were highly composed.

Among the boys whose mothers were rated as highly composed ($N = 11$), 36% strongly endorsed conservative sexual attitudes. In contrast, among the girls in the sample whose mothers were rated as highly composed ($N = 30$), 57% strongly endorsed conservative sexual attitudes. In addition, of those boys whose mothers were highly composed, 73% believed firmly that condoms are protective, whereas only 60% of the girls whose mothers were highly composed believed firmly that condoms are protective. For the remaining outcome variables—fear of AIDS, anxiety about AIDS, and perceived likelihood of future HIV infection—similar proportions of boys and girls whose mothers were highly composed strongly endorsed sexual attitudes that are associated with safer sex. In addition, similar proportions of boys and girls whose mothers were highly composed perceived many barriers to condom use.

Mothers' observed receptivity. The majority of mothers of both boys (13 / 15 = 87%) and girls (21 / 37 = 57%) were rated as highly receptive. Chi-square analysis revealed that boys were marginally more likely than girls to have highly receptive mothers, $\chi^2(1, 52) = 2.83, p = .09$. Thus, the remaining contingency tables were not constructed for mothers' receptivity. Any apparent differences in the sexual attitudes of boys and girls with highly

receptive mothers would merely reflect the overall pattern of boys' mothers being more receptive than girls' mothers.

Adolescents' reports of mothers' responsiveness. The majority of mothers of both boys (12 / 15 = 80%) and girls (28 / 37 = 76%) were perceived by their adolescents as highly responsive during previous sexuality conversations. Chi-square analysis indicated that boys and girls were equally likely to indicate that their mothers were highly responsive, $\chi^2(1, 52) = .02, p = .90$. Thus, it was feasible to examine the associations between gender and adolescent sexual attitudes for just those adolescents who rated their mothers as highly responsive.

Among the boys whose mothers were perceived as highly responsive ($N = 12$), 33% strongly endorsed conservative sexual attitudes. In contrast, among the girls in the sample whose mothers were perceived as highly responsive ($N = 28$), 64% strongly endorsed conservative sexual attitudes. In addition, of those boys whose mothers were highly responsive, only 17% reported feeling very anxious about AIDS, whereas 35% of the girls whose mothers were highly responsive reported feeling very anxious about AIDS. Further, of those boys who rated their mothers as highly responsive, 83% reported firmly believing that condoms are protective. In contrast, only 54% of the girls who rated their mothers as highly responsive indicated firmly believing that condoms are protective. For the remaining outcome variables—fear of AIDS, and perceived likelihood of future HIV infection—similar proportions of boys and girls who rated their mothers as highly responsive strongly endorsed sexual attitudes associated with safer sex. In addition, similar proportions of boys and girls whose mothers were highly responsive perceived many barriers to condom use.

Patterns by Virginity Status

Mothers' observed composure. Most mothers of both nonvirgins (11 / 15 = 73%) and virgins (30 / 37 = 81%) were rated as highly composed. Chi-square analysis revealed that virgins and nonvirgins were equally likely to have highly composed mothers, $\chi^2(1, 52) = .43$, $p = .51$. Thus, it was feasible to examine associations between virginity status and adolescent sexual attitudes for just those adolescents whose mothers were highly composed.

Among the nonvirgins whose mothers were rated as highly composed ($N = 11$), 36% strongly endorsed conservative sexual attitudes. In contrast, among the virgins whose mothers were highly composed ($N = 30$), 57% strongly endorsed conservative sexual attitudes. In addition, of those nonvirgins whose mothers were highly composed, 100% reported being very fearful of AIDS, whereas only 58% of the virgins were very fearful of AIDS. Among the nonvirgins, 73% of those whose mothers were highly composed reported feeling very anxious about AIDS. In contrast, only 29% of the virgins whose mothers were highly composed were very anxious about AIDS. Further, 18% of the nonvirgins whose mothers were highly composed perceived many barriers to condom use, whereas 60% of the virgins whose mothers were highly composed perceived many barriers to condom use. Similar proportions of virgins and nonvirgins whose mothers were highly composed believed strongly that they were likely to get AIDS in the future and perceived many barriers to condom use.

Mothers' observed receptivity. Nearly half of the mothers of nonvirgins (6 / 15 = 40%) and most of the mothers of virgins (29 / 37 = 78%) were rated as highly receptive.

Chi-square analysis indicated that virgins were more likely to have mothers who displayed high receptivity than were nonvirgins, $\chi^2(1, 52) = 8.82, p < .01$. The differences in group size may be driving this finding, and it therefore, may not be meaningful. Thus, the remaining contingency tables were not constructed. Any apparent differences in the sexual attitudes of virgins and nonvirgins with highly receptive mothers would merely reflect the overall pattern of virgins' mothers being more likely to be highly receptive than nonvirgins' mothers, differences that may be solely due to group size.

Adolescents' reports of mothers' responsiveness. Most mothers of both nonvirgins (9 / 15 = 60%) and virgins (32 / 37 = 86%) were rated by their adolescents as highly responsive during previous sexuality conversations. Chi-square analysis indicated that virgins were more likely to have rated their mothers as highly receptive than were nonvirgins, $\chi^2(1, 52) = 4.49, p < .05$. Thus, the remaining contingency tables were not constructed. Any apparent differences in the sexual attitudes of virgins and nonvirgins with highly responsive mothers would merely reflect this overall pattern.

Chapter 4

DISCUSSION

The purpose of the current study was to examine mother-adolescent sexuality communication and its relations to adolescent sexual attitudes and behaviors, within the context of adolescent developmental processes. The study had five specific aims. First, the study sought to understand the patterns of sexuality communication in mother-adolescent dyads. Second, the study used observational methods to examine mothers' communication quality during sexuality conversations, and the associations between mothers' communication quality and adolescent sexual attitudes and behaviors. The third aim of the study was to examine adolescents' perceptions of their mothers' communication during previous sexuality conversations, and to understand the associations between those perceptions and the adolescents' sexual attitudes and behaviors. Finally, the study sought to examine these associations within the context of adolescent individuation, and identity development.

Summary of Findings

Although most of the major hypotheses in the study were not supported (see Table 15), those findings that did emerge point to future research that may provide insight into the associations between mother-adolescent sexuality communication, adolescent sexual attitudes, and adolescent psychosocial development. Because so few of the adolescents in the study had ever had sexual intercourse, it was not possible to assess group differences in the associations with adolescent sexual behaviors. Family "types" were identified, with one group of mother-adolescent dyads exhibiting higher quality communication, whereas the

Table 15

Summary of Hypotheses and Results

Hypothesis	Results/Findings
<p>1. Mothers' observed communication and adolescent sexual attitudes and behaviors would be associated, such that in dyads where mothers demonstrate positive, high quality communication during mother-adolescent sexuality conversations, their adolescents will engage in fewer unsafe sexual behaviors, and would hold attitudes that are associated with safer sex behaviors.</p>	<p>Mothers who displayed greater receptivity had adolescents who reported less fear of AIDS, reported less anxiety about AIDS, perceived less likelihood of future HIV infection, and perceived more barriers to condom use. Mothers' observed composure was not significantly related to any of the adolescent sexual attitudes variables.</p> <p>This hypothesis was partially supported. Significant findings were in the direction opposite of what was predicted.</p>
<p>2. Adolescents' perceptions of their mothers' communication and the adolescents' sexual attitudes and behaviors would be related, such that in dyads where adolescents perceive their mothers as more responsive communicators during previous sexuality conversations, the adolescents would engage in fewer unsafe sexual behaviors, and would hold attitudes that are more strongly associated with safer sex behaviors.</p>	<p>Adolescents who reported that their mothers were highly responsive during previous sexuality conversations believed they were less likely to get HIV in the future, and reported lower expectancies for the protective abilities of condoms.</p> <p>This hypothesis was partially supported. Significant findings were in the direction opposite of what was predicted.</p>
<p>3. Mothers' observed communication and adolescent individuation would be associated. Specifically, in dyads where mothers demonstrate positive, high quality communication during sexuality conversations with their adolescents, the adolescents would be more emotionally connected to their mothers and more independent from maternal control.</p>	<p>Mothers who displayed more composure had adolescents who reported feeling more emotionally connected to their mothers. Mothers' observed receptivity was not significantly associated with adolescent individuation.</p> <p>This hypothesis was partially supported.</p>

Hypothesis	Results/Findings
4. Adolescents' perceptions of their mothers' communication and adolescent individuation would be associated. In dyads where adolescents perceive their mothers as more responsive during previous sexuality conversations, the adolescents would be more emotionally connected to their mothers and more independent from maternal control.	Adolescents who perceived their mothers as responsive during previous sexuality conversations reported feeling more emotionally connected to their mothers, and reported greater independence from maternal control. This hypothesis was supported.
5. Adolescents who are more emotionally connected to their mothers and more independent from maternal control would report fewer sexually risky behaviors, and would hold sexual attitudes that are more strongly associated with safer sex.	Adolescent connectedness to mother and independence from maternal control were not significantly associated with any of the adolescent sexual attitudes variables. This hypothesis was not supported.
6a. Adolescent connectedness to mother and independence from maternal control would mediate the association between mothers' observed communication quality during sexuality conversations and adolescent sexual attitudes and behaviors.	Adolescent individuation did not mediate the association between mothers' observed communication and the adolescent sexual attitudes variables. This hypothesis was not supported.
6b. Adolescent connectedness to mother and independence from maternal control would mediate the association between adolescents' reports of their mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes and behaviors.	Adolescent individuation did not mediate the association between adolescents' reports of their mothers' responsiveness and the adolescent sexual attitudes variables. This hypothesis was not supported.
7. Mothers' observed communication and adolescent identity development would be positively associated. Specifically, adolescents whose mothers demonstrate positive, high quality communication during sexuality conversations would score higher on identity exploration and commitment.	Mothers' observed composure and receptivity were not significantly associated with adolescent identity exploration and commitment. This hypothesis was not supported.

Hypothesis	Results/Findings
8. In dyads where adolescents perceive their mothers as more responsive communicators during previous sexuality conversations, the adolescents would score higher on identity exploration and commitment.	<p>Adolescents who reported that their mothers were highly responsive also reported having made more identity commitments in more domains. Responsiveness was not significantly associated with adolescent identity exploration.</p> <p>This hypothesis was partially supported.</p>
9. Adolescent identity exploration and commitment would relate to adolescent sexual attitudes and behaviors, such that more exploration and commitment would be associated with less risky sexual behavior and with stronger attitudes that are associated with safer sexual behavior.	<p>Adolescents who reported more identity commitments believed they were less likely to be infected with HIV in the future, and reported lower expectancies for the protective abilities of condoms. Adolescent identity exploration was not significantly associated with any of the adolescent sexual attitudes variables.</p> <p>This hypothesis was partially supported. Significant findings were in the direction opposite of what was predicted.</p>
10a. Adolescent identity exploration and commitment would mediate the association between mothers' observed communication quality during sexuality conversations and adolescent sexual attitudes and behaviors.	<p>Neither adolescent identity exploration nor identity commitment mediated the association between mothers' observed communication and the adolescent sexual attitudes variables.</p> <p>This hypothesis was not supported.</p>
10b. Adolescent identity exploration and commitment would mediate the association between adolescents' reports of their mothers' responsiveness during previous sexuality conversations and adolescent sexual attitudes and behaviors.	<p>Adolescent identity exploration did not mediate the association between adolescent reports of mothers' responsiveness and adolescent sexual attitudes.</p> <p>This hypothesis was not supported.</p>

other group reported more frequent sexuality communication. Mother-adolescent sexuality communication was related to adolescent sexual attitudes, but in the direction opposite of that predicted. In addition, mother-adolescent sexuality communication was inconsistently associated with both adolescent individuation and identity development, neither of which were related to adolescent sexual attitudes. Patterns of association between communication and adolescent sexual attitudes were found to vary somewhat depending on whether mothers' communication was evaluated by their adolescents or by third-party observers. Because of the failure to find direct relations between the variables, the mediated hypotheses were not supported. Explorations of the patterns of association across gender and virginity-status highlight questions for future research.

Mother-Adolescent Sexuality Communication

Patterns of Communication

The present study sought to identify patterns of mother-adolescent sexuality communication. In doing so, two groups with somewhat different communication patterns were identified. The first group, the Quality Communicators, had somewhat higher scores on the measures of mothers' communication quality than on the measures of communication frequency. In contrast, the Quantity Communicators had higher scores on the frequency of mother-adolescent sexuality communication than on the quality of the communication. The frequency of mother-adolescent sexuality communication about specific topics fell into three general categories: physical development, sexual safety, and sexual feelings. These categories are very similar to those identified by Rosenthal and Feldman (1999). The patterns associated with the quality of mother-adolescent sexuality communication were also similar

to those found in previous research. Specifically, Rosenthal, Feldman and Edwards (1998) identified a number of styles of mothers' sexuality communication, including one style labeled "mutually interactive." Mothers with this style of communication were comfortable and willing to discuss sexuality. The mothers who fit into this category are similar to the mothers in the Quality Communicators group in the current study. Mothers' observed composure is similar to the comfort identified by Rosenthal et al., and mothers' observed receptivity is similar to what they termed "willingness to discuss sexuality." In short, the self-report and observed patterns of communication identified in the current study are similar to those identified in previous research.

Comparisons between the Quality and Quantity Communicator groups yielded a few interesting differences. For instance, the adolescents in the Quality Communicators group were more likely than those in the Quantity Communicators group to be virgins. Does this imply that the quality of mother-adolescent sexuality communication is more important than the quantity of such communication in delaying the onset of adolescent sexual intercourse? Previous research suggests that both quantity and quality are important. For example, more frequent sexuality communication (Fisher, 1987; Leland & Barth, 1993; Pick & Palos, 1995) and high quality communication (East, 1996) have been identified as predictors of delayed first intercourse. There is some support for the conclusion that the quality of mothers' communication is more important than the quantity of communication in reducing adolescents' sexual risk. Specifically, adolescents whose parents discussed sexuality with them frequently and in a supportive manner took fewer sexual risks than did those whose parents talked with them frequently but in a less supportive manner (Rodgers, 1999). The results of the current study also point to questions about the direction of these effects. For

example, is it possible that mothers bring up more topics and are inclined to discuss those topics more frequently when they know their adolescents are not virgins? It may also be that mothers of virgins find it easier to engage in high quality communication because they know their adolescents are not sexually active.

Adolescents in the Quantity Communicators group were found to be more anxious about AIDS than were those in the Quality Communicators group. In other words, adolescents who have had frequent discussions about sexuality with their mothers and who reported lower quality communication were more anxious about AIDS than were adolescents who have discussed sexuality less often with their others but reported better quality communication. This is interesting in light of previous research in which the frequency of mother-adolescent sexuality communication was not associated with adolescent perceptions of vulnerability to AIDS (Boone et al., 2003). In that study, we concluded that mothers do not transmit their own concerns about AIDS to their adolescents. The current findings suggest that a combination of communication frequency and quality relate to adolescent perceptions of vulnerability to AIDS. Understanding the joint contributions of both communication quantity and quality may shed light on the processes by which mother-adolescent sexuality communication relates to adolescent sexual attitudes.

Associations with Sexual Attitudes

Barriers to condom use. It was expected that mothers who displayed greater receptivity when talking about sexuality would have adolescents who were more comfortable and less embarrassed about the possibility of buying and using condoms. One of the major concerns adolescents have about discussing sexual topics with their mothers is the fear of being embarrassed (Jaccard, Dittus, & Gordon, 2000). It was rationalized here that when

mothers were more open and willing to listen during sexuality conversations, their adolescents would be less embarrassed and more comfortable discussing sexuality. In turn, the decreased embarrassment and discomfort associated with discussing sexuality was expected to translate to less embarrassment and discomfort with the prospect of purchasing and using condoms. Few mothers are perceived by their adolescents as good communicators (Rosenthal, Senserrick, & Feldman, 1998), and thus, it seems that when adolescents do perceive their mothers as open and willing to discuss sexuality, the result may be increased comfort for the adolescents.

Mothers' receptivity and adolescents' perceptions of barriers to condom use were related, but they were related such that those mothers who displayed greater receptivity had adolescents who believed *more* strongly that buying and using condoms would be embarrassing and uncomfortable, not less, as predicted. Although previous research has not examined these particular qualities of mothers' communication in conjunction with adolescent perceptions of barriers to condom use, one can apply associations between overall quality of communication and actual condom use by adolescents here. A number of studies have found that adolescents whose mothers are high quality communicators are more likely to use condoms (Huebner & Howell, 2003; Leland & Barth, 1993; Pick & Palos, 1995). It can be presumed that those who do use condoms do not perceive barriers to condom use. Thus, the finding that adolescents whose mothers demonstrated greater receptivity perceived more barriers to condom use was surprising.

It is possible that the unmeasured variable that is driving this association is adolescents' condom knowledge, and mothers' perceptions of that knowledge. Previous research has found that when mothers were more dominant in conversations about sexuality-

related topics, adolescents were less knowledgeable about AIDS (Lefkowitz, Romo et al., 2000). This previous finding was correlational, and therefore, it is not clear if mothers' dominance caused the lack of knowledge, or if the lack of knowledge led the mothers to be more dominant. For many adolescents, there is a weak association between how much they believe they know about birth control and how well they do on knowledge tests about birth control (Radecki & Jaccard, 1995). In addition, some parents do not discuss sexuality with their adolescents because the adolescents tell them that they already know everything they need to know (Jaccard et al., 2000). Some mothers may be aware of the discrepancy between what adolescents know and what they think they know. It is possible that mothers who detect such a discrepancy, and those who perceive their adolescents as less knowledgeable about condoms, might attempt to compensate for that lack of knowledge by changing their communication behaviors. In the current study, it may be that the mothers correctly perceived their adolescents as lacking knowledge about condoms, and were more receptive in an effort to encourage the adolescents in the conversation. Further, that lack of knowledge on the part of the adolescents may have manifested in adolescent perceptions of barriers to condom use. In the future, it will be important to assess both adolescents' knowledge about condoms, and mothers' perceptions of adolescents' knowledge, in order to fully understand the association between mothers' communication and adolescents' perceptions of barriers to condom use.

Outcome expectancies for condom use. According to health behavior models such as the Health Belief Model, adolescents will only use condoms if they believe there are benefits to condom use (Strecher et al., 1997). Specifically, adolescents must believe that condoms can protect them from pregnancy and STIs. In the current study, it was expected that higher

quality sexuality communication from mothers would foster positive attitudes about condoms, and therefore, communication would be associated with more positive outcome expectancies for condom use. This hypothesis drew on previous research demonstrating that frequent and positive communication predicts fewer risky sexual attitudes and behaviors (e.g., DiIorio et al., 1999; Karofsky et al., 2000; Miller et al., 1999). The presumption from this line of research seems to be that frequent positive communication socializes adolescents about sex. Therefore, it was assumed that mothers who exhibited high quality communication would socialize their adolescents toward a pro-condom attitude, but this may not have been the case in the current study. Adolescents' who rated their mothers as more responsive during sexuality conversations reported fewer positive outcome expectancies for condom use, not more, as expected. It may be that during these previous conversations, the mothers were responsive, but at the same time were advocating abstinence before marriage, and that one of their arguments for abstinence was that condoms are ineffective. If this was the case, it would not be surprising that responsiveness was found to be associated with fewer positive expectations for the protective abilities of condoms. In future studies, if adolescents are asked to rate their mothers' responsiveness when discussing specific sexuality topics (e.g., condoms, abstinence), it will be possible to assess associations between mothers' communication quality and adolescent sexual attitudes in the context of specific sexuality topics. Further, it may be important to also assess the actual message conveyed by mothers when discussing these topics (e.g., "using condoms is important", or "using condoms is immoral").

Perceived vulnerability to AIDS. The current study sought to find associations between the quality of mothers' sexuality communication and adolescents' perceptions of

their vulnerability to AIDS. It was expected that positive communication would be associated with a positive relationship climate between mothers and adolescents, and that a positive climate would in turn allow for realistic discussions of AIDS. Further, those discussions of AIDS were expected to result in adolescents understanding that AIDS is a threat to them. In support of this rationale, previous research has found that adolescents who experience high quality communication from their mothers are more knowledgeable about AIDS (Lefkowitz, Romo et al., 2000), because the positive climate generated by the high quality communication apparently creates an environment that is conducive to learning. Unfortunately, the prediction that mothers who were rated as high quality communicators would have adolescents who perceived themselves as more vulnerable to AIDS was not supported. In fact, mothers' communication quality was related to less perceived vulnerability to AIDS among the adolescents, not more.

In general, the adolescents' did not perceive themselves to be very vulnerable to AIDS. This may have been because, in this sample, few of the adolescents had ever had sex. In addition, it may be that few of the adolescents planned to have sex in the near future. Evidence for this can be found in the relation between adolescents' perceptions of vulnerability to AIDS and their conservative sexual attitudes. Specifically, the adolescents who were less concerned about AIDS reported more conservative sexual attitudes. Those conservative attitudes may indicate that these adolescents do not plan to have sex any time in the near future, and therefore, may not be concerned about AIDS. It may also be that the messages mothers communicated did not indicate that adolescents should be concerned with AIDS. Previous research examining the associations between mothers' and adolescents' perceived AIDS vulnerability indicates that mothers who are not concerned about their own

vulnerability to AIDS tend not to be concerned about the vulnerability of their adolescents (Boone et al., 2003). Therefore, it is possible that in the current study, mothers did not perceive themselves as very vulnerable to AIDS, and therefore, socialized their children to be less concerned with AIDS. Of course, these possible explanations imply a causal connection between mothers' communication behaviors, adolescents' interpretations of those behaviors, and their subsequent attitudes. In the future, it will be useful to assess these relations in ways that, unlike the current study, allow for the investigation of causal associations.

Somewhat puzzling is the finding that adolescent perceptions of vulnerability to AIDS were more frequently associated with mothers' communication than were the other sexual attitudes. It is unclear why this is the case, but it may be related to the specific content of the mothers' and adolescents' sexuality conversations. Perhaps the content of these conversations was focused on HIV and its transmission. To more fully understand the associations between mother-adolescent sexuality communication and adolescent sexual attitudes, it will be important to assess the content of the communication. Specifically, it would be informative to assess the quality of mothers' sexuality communication when discussing specific sexuality topics with their adolescents.

Conservative sexual attitudes. It is interesting to note that although adolescent barriers to condom use, outcome expectancies for condom use, and perceptions of vulnerability to AIDS were related to mothers' communication, adolescents' conservative sexual attitudes were not associated with mothers' observed composure and receptivity, or with adolescents' reports of mothers' responsiveness. Both frequent and high quality sexuality communication between mothers and adolescents have been associated with more conservative adolescent sexual attitudes (DiIorio et al., 1999; Miller, Norton et al., 1998). In addition, one researcher

has found that when mothers and adolescents discuss sexuality more frequently, there is greater agreement in their sexual attitudes (Fisher, 1987). The absence of associations between mother-adolescent communication and adolescent conservative sexual attitudes—in conjunction with the presence of associations between communication and other adolescent sexual attitudes—may be due to the differences between these sexual attitudes. Although each of these sexual attitudes represents a belief, conservative sexual attitudes may be less emotional for adolescents than the other attitudes. It may be that the quality of mothers' communication is more strongly associated with beliefs that have more of an emotional overtone, and less strongly associated with less emotional attitudes. The quality of mothers' communication may elicit emotions from the adolescents, which in turn could influence adolescents' attitudes regarding issues that are somewhat emotional.

The associations between mother-adolescent sexuality communication and adolescent sexual attitudes identified in this study point to the importance of assessing the content, as well as the quality, of such communication. For example, adolescents whose mothers frequently discuss abstinence will likely have very different sexual attitudes than will adolescents whose mothers frequently discuss condoms. It may also be important to include mothers' sexual attitudes when assessing these associations. Previous research has demonstrated that the association between mothers' sexuality communication and adolescents' sexual attitudes may depend on the sexual attitudes held by mothers (e.g., Fisher, 1989; Moore et al., 1986). To the extent that mothers' sexual attitudes relate to the content of their communication, those attitudes may also be associated with the associations between the quality of mothers' communication and adolescents' sexual attitudes.

Adolescent Individuation

One goal of the study was to understand the ways that adolescent psychosocial processes such as individuation are related to mother-adolescent sexuality communication, adolescent sexual attitudes, and the associations between them.

Communication and Individuation

As expected, mothers who were rated, both by their adolescents and the third-party observers, as high quality communicators had adolescents who felt more emotionally connected to their mothers. This finding is consistent with previous research suggesting that a “love oriented” parenting style fosters adolescent individuation (Pardeck & Pardeck, 1990). It is not surprising that mothers’ observed composure was found to be associated with adolescents’ feelings of being emotionally connected to their mothers. It makes sense that these mothers, who were seen as interested in and enjoying their adolescents, would have adolescents who felt emotionally connected to their mothers. Although mothers’ observed communication was found to be related to adolescents’ feelings of connectedness, it was not found to relate to adolescents’ independence from their mothers’ control. According to Eccles et al. (1997), when parents are supportive, their adolescents are able to become independent. In the current study, it was expected that this independence occurs because adolescents respond to their mothers’ supportiveness—and the attendant message that their mothers trust them to become and behave responsibly independent—by being more independent. This expectation was not, however, supported. Perhaps for some adolescents, there is a point at which high quality communication from mothers relates to less adolescent independence. It may be that for some adolescents, composure from mothers relates to less independence, but for others it relates to more independence.

Further, the patterns of association between mother-adolescent sexuality communication and adolescent individuation may depend on other relationship factors, such as the overall quality of the mother-adolescent relationship or their general communication patterns. In future research examining associations between mother-adolescent communication about sexuality and adolescent individuation, it will be important to include assessments of the overall relationship between mothers and adolescents. In addition, assessing the quality of communication during general conversations may provide a comparison point for understanding these relations as well.

Individuation and Sexual Attitudes

Although it was expected that adolescent individuation would be related to adolescent sexual attitudes and behaviors, this prediction was not supported. Previous research has found associations between individuation and “problem” behaviors such as risky sex (Jessor et al., 1995; Turner et al., 1993), but in the current study, it was not possible to examine adolescent sexual behaviors, which was unfortunate because adolescent sexual behavior may provide an explanation for associations between individuation and sexual attitudes. For example, adolescent individuation and sexual behavior may have an additive effect on sexual attitudes such that adolescents who are both practicing safer sex and are individuated will endorse safer sex attitudes more strongly. If there is an association between adolescent individuation and sexual attitudes, it will be important in future research to understand the role of sexual behavior in that relation.

Adolescent Identity Development

A goal of the current study was to understand the ways in which adolescent psychosocial processes such as identity development relate to mother-adolescent sexuality communication, adolescent sexual attitudes, and the associations between them.

Communication and Identity

It was expected that mother-adolescent sexuality communication would relate to adolescent identity exploration and commitment. Previous research has demonstrated an association between high quality mother-adolescent communication and adolescent identity development (e.g., Allen, Hauser, Bell et al., 1994; Grotevant & Cooper, 1985). In the current study, adolescents who rated their mothers as highly responsive during previous sexuality conversations reported having made more identity commitments. This is consistent with previous work indicating that adolescents are more likely to be in the achieved identity status when their mothers are more positive and encouraging (Sabatelli & Mazor, 1985; Waterman, 1982). Adolescent identity commitment was not, however, related to mothers' observed communication. Although previous research has supported the hypothesis that high quality communication from mothers would predict greater identity exploration (Grotevant & Cooper, 1985), this hypothesis was not supported in the current study.

The original goal of this part of the study was to categorize the adolescents according to the degree to which they were exploring their identity or had made identity commitments. The identity status approach (e.g., Marcia, 1980) to examining adolescent identity development may have provided more meaningful distinctions than did examining exploration and commitment separately. Specifically, the distinction between the moratorium and diffused statuses may be more important than between less and more exploration and

commitment. By examining exploration and commitment together—as is done with the identity status approach—it may be easier to identify associations between identity development and mother-adolescent communication.

In addition, mothers' communication was assessed specifically within sexuality conversations. Adolescent identity exploration and commitment, however, were assessed generally, in regard to several domains of life. Perhaps mother-adolescent sexuality communication would be related to adolescent identity development if identity exploration and commitment were assessed specifically in regard to sexual values and sexual relationships. Alternatively, general mother-adolescent communication quality, as opposed to sexuality-specific communication, may relate to adolescent identity exploration and commitment more generally, as measured in the current study. In the future, when addressing questions regarding the associations between mother-adolescent communication and adolescent identity development, it will be important to be consistent in the degree of specificity of communication and identity development.

Identity and Sexual Attitudes

Adolescent identity exploration failed to relate to sexual attitudes. As suggested by Balistreri et al. (1995), commitment may be more “readily identifiable” (p. 189) and therefore easier to measure than identity exploration. Further, Balistreri et al. suggest that future research should try to further explicate and operationalize identity exploration. For example, the diffusion identity status is different from the achieved identity status in that adolescents in both statuses are said to not be exploring. But, adolescents in either status may have engaged in identity exploration in the past. Future measurement of identity exploration must clarify whether it is assessing current exploration or lifetime identity exploration.

Although identity exploration was not related to adolescent sexual attitudes, adolescents who reported more identity commitments perceived a greater likelihood that they would get AIDS in the future and reported fewer positive expectancies for condom use. These associations, however, were in the direction opposite of that predicted. Identity commitment is expected to reflect clarity of values (Cooper & Grotevant, 1987), and as a result, may relate to more responsible decision making and behavior. The assumption made here was that adolescents' values would include an endorsement of safer sex. It may be, however, that the adolescents in this sample do not agree with the use of condoms, or do not believe that adolescents should be engaging in sexual intercourse. It is possible that these adolescents are hearing abstinence messages at church and at home that premarital sex is wrong, that the use of birth control is wrong, and that condoms are not protective. The adolescents in the sample reported relatively frequent church attendance, supporting the possibility that the adolescents were exposed to abstinence messages, as opposed to messages associated with safer sex values. If this is the case and these adolescents have internalized the abstinence messages and made identity commitments reflective of those values, then it is not surprising that greater identity commitments would relate to fewer positive outcome expectancies for condom use. Further, if these adolescents have committed to an identity of abstaining from sex before marriage, they would likely be less concerned about their vulnerability to AIDS.

Observed vs. Adolescent-Reported Communication

One goal of this study was to explore possible differences in the associations between observed and adolescent-reported communication and adolescent psychosocial development

and sexual attitudes. The findings indicate that mothers' observed communication related to adolescent sexual attitudes and psychosocial development in ways that are different from adolescents' reports of mothers' communication. Specifically, mothers' observed receptivity was more strongly related to adolescent perceptions of AIDS vulnerability than were adolescents' perceptions of mothers' responsiveness. Adolescent outcome expectancies for condom use were also associated with adolescents' reports of mothers' communication but not with mothers' observed communication.

In general, adolescents' reports of their mothers' communication were more strongly associated with the adolescents' sexual attitudes and psychosocial development than were observations of mother-adolescent communication. It is possible that associations with adolescent-reported communication are inflated due to response bias. That is, sexual attitudes and mothers' responsiveness were both assessed by adolescent report, whereas receptivity and composure were assessed by observer report. Therefore, associations within reporter may be inflated compared to associations across reporters. In addition, differences in the specificity of the adolescent-report and observed communication measures may help to explain the different patterns found in associations with adolescent-reported and observed communication. The items in the adolescent-report measure of mothers' communication were more specific and referred to more discrete behaviors. In contrast, the items used to evaluate mothers' communication during the videotaped sexuality conversation were more global. For example, one item in the adolescent report measure read, "My mother wants to know my questions about these topics," whereas an item used in the coding was, "Mother was comfortable interacting with her adolescent." Further, the adolescents had more than one conversation upon which to evaluate their mothers' communication, whereas the raters only

evaluated one conversation. Given that the adolescents were drawing on more than one conversation and were evaluating specific discrete behaviors, they may have provided more varied evaluations of their mothers' communication. Taken together, these differences may explain the greater variability in the adolescent-reported communication than in the coded measures of communication, which in turn, may help to explain the patterns of association with adolescent-reported and observed communication. In contrast to the adolescent-reported communication, the lower variability in the coded communication may have decreased the likelihood of finding associations with adolescent sexual attitudes, individuation, and identity development.

Adolescents' reports of mothers' communication were found to relate to adolescent individuation, as was mothers' observed composure. Mothers' observed receptivity, however, was not associated with adolescent individuation. In addition, adolescents' reports of mothers' communication were found to relate to adolescent identity commitment, but mothers' observed communication was not related to either identity exploration or commitment. Previous research has examined the differences in associations found with self-report measures versus third-party observations. In one study, adolescents' reports of mother-daughter interactions were similar to evaluations of outside observers (Gonzales, Hiraga, & Cauce, 1998). On the other hand, other research has found that adolescents perceive themselves as less supportive and more conflictual in mother-adolescent interactions than do third-party observers (Welsh, Galliher, & Powers, 1998). Further, Fisher (1989) concluded from a study of mother-adolescent sexuality communication that the actual quantity of mother-adolescent sexuality communication was less predictive of adolescents' sexual behaviors than were adolescents' perceptions of how much communication had taken place.

The findings from the current study suggest a conclusion similar to that drawn by Fisher. Third-party observations of the quality of mother-adolescent sexuality may be less important for predicting adolescent psychosocial development than are the adolescents' perceptions of the quality of that communication.

Another possible explanation for the greater association between adolescent-reported communication and adolescent psychosocial development is that, when responding to the questions about mothers' responsiveness during previous sexuality conversations, the adolescents generalized to all communication with their mothers. Thus, the associations found for the adolescent-reported communication may be relevant to all communication, not just sexuality conversations as with mothers' observed communication. This possibility is supported by research that has found general communication to be more predictive of adolescent outcomes than topic-specific communication (Fisher, 1987). It may be that general psychosocial developmental processes such as individuation and identity development are more likely to be associated with more general mother-adolescent communication than with topic-specific communication.

Although adolescents' reports were associated more often with adolescent sexual attitudes and psychosocial development, observation of mother-adolescent communication is still important. In this particular study, however, the system used to rate the observations of mothers' communication may not have been fine-grained enough. Specifically, the results for observed communication may have followed the pattern found for the adolescent-reported communication if the items in the measure addressed discrete behaviors, as opposed to global patterns and qualities of communication, as the adolescent-report measure did. Because of the differences in the measures, and the small sample, one cannot conclude from these

findings that observations of mother-adolescent communication do not contribute—above and beyond what we can learn from adolescent reports—to understanding the associations between mother-adolescent communication and adolescent sexual attitudes or adolescent individuation and identity development. Previous research has demonstrated associations between observations of parent-adolescent interactions and adolescent outcomes (e.g., Flannery, Montemayor, Eberly, & Torquati, 1993; Grotevant & Cooper, 1985). Such relations between parent-adolescent interactions and adolescent outcomes may not have been identified had these researchers relied solely on adolescents' self reports. It will be important to continue exploring the questions of whether adolescents' perceptions of their interactions with their mothers are more or less predictive of their sexual attitudes and psychosocial development than are third-party observations of those interactions. One strategy for more directly assessing this question would be to use the same measure for the adolescents' evaluations as for the third-party observations.

Mediation of the Associations Between Mother-Adolescent Sexuality Communication and Adolescent Sexual Attitudes

A goal of the current study was to examine the role of adolescent psychosocial development in the associations between mother-adolescent sexuality communication and adolescent sexual attitudes. Neither adolescent individuation nor identity development were found to mediate these associations. In many cases, mediation was precluded because direct associations were not present between mothers' communication and adolescent sexual attitudes. In other cases, mediation was not found because mothers' communication was not associated with adolescent psychosocial development, and in the remaining cases, mediation

was not found because psychosocial development was not related to adolescent sexual attitudes.

Given the sample size and some measurement issues in the current study, it may be premature to conclude that adolescent psychosocial development does not mediate these associations. Future research examining this issue may detect a mediation effect if mothers' communication and adolescent psychosocial development are measured at the same level. For example, it may be necessary to assess sexuality-specific identity development, as opposed to general identity development, in order to find associations with mothers' sexuality communication. Further, associations may be found between adolescent individuation and adolescent sexual attitudes if individuation is assessed as it relates directly to adolescent sexual attitudes and behaviors.

Adolescent Effects

The present study was purely correlational, precluding any conclusions about causality or the direction of effects. The assumption was, however, that mothers' communication would cause or facilitate adolescent psychosocial development and sexual attitudes. As Kerr and Stattin (2003) note, this assumption is common and is often questionable. In an examination of parenting behaviors and adolescent delinquency, Kerr and Stattin found that parenting behaviors were a reaction to adolescent delinquency, not a cause. Cross-lagged relations demonstrated that adolescent delinquency led to less supportive and controlling behaviors on the part of parents. They concluded that parents' behaviors were responses to their adolescents' delinquency, not causes of the adolescents' behavior. This finding points to the possibility that, in the current study, the adolescents' individuation

elicited higher quality communication from their mothers, as opposed to mothers' communication causing greater adolescent individuation. Given the nature of the study, it was not possible to determine the direction of the associations. In the future, it will be important to design studies that allow for determining if mothers' communication causes adolescent individuation or if adolescent individuation elicits certain communication behaviors from mothers.

In the current study, adolescent individuation was conceptualized as both a property of the mother-adolescent relationship and as a characteristic of the adolescent. Individuation was, however, measured as a characteristic of the adolescent. Distinctions between child variables, parent variables, and relationship variables have been addressed in the parental monitoring literature. According to Stattin and Kerr (2000), much research has been based on the assumption that monitoring is an activity parents engage in to guide and supervise their adolescents. The common conclusion is that such monitoring prevents adolescents from getting into trouble. Stattin and Kerr's research demonstrates that monitoring is often an activity that is enacted by the adolescents, not the parents. Adolescents tell their parents about their friends, activities, and whereabouts. Stattin and Kerr concluded that monitoring is not necessarily a parental activity, but is instead an activity of adolescents, and that monitoring is also a property of the parent-adolescent relationship. Their conclusions suggest that, in future research, it will be important to measure adolescent individuation as both a characteristic of the adolescent and as a property of the parent-adolescent relationship.

Adolescent Age

Adolescent individuation was significantly associated with the quality of mother's communication but not with adolescent sexual attitudes. It is possible that the associations between adolescent individuation and sexual attitudes were not significant because of the age range of the adolescents (15 to 18 years). Individuation may operate differently among the younger adolescents than among the older adolescents, although no previous studies comparing adolescent individuation across age were found. Further, only one study examining the associations between individuation and adolescent sexuality was found. Specifically, Turner et al. (1993) found that the individuation of 11 to 14 year olds predicted sexual behavior such that greater autonomy was related to having had sexual intercourse. It is not clear if this finding would imply a stronger or weaker relation between individuation and sexual attitudes among the older adolescents in the current study. In combination with the absence of a significant relation between individuation and sexual attitudes in the current study, Turner et al.'s findings suggest that the ways in which individuation is associated with adolescent sexual attitudes and behaviors may vary across adolescent age. In future research, it may be informative to address the ways in which relations between individuation and sexual attitudes vary by age.

Adolescent Gender

Although it was not possible to test for gender differences in the associations between mother-adolescent sexuality communication and adolescent sexual attitudes, patterns of differences between boys and girls did emerge from additional, exploratory analyses. First, mothers of boys were observed to be more receptive than mothers of girls. Though the small

sample size cautions against generalizing this finding, it is interesting because it is somewhat counterintuitive. Mothers are typically found to talk more with their daughters about sexuality than with their sons, and to talk about more topics with their daughters (Fisher, 1987; Nolin & Petersen, 1992; Rosenthal & Feldman, 1999). Perhaps the mothers of boys, during the videotaped sexuality conversations, were attempting to broaden the scope of the sexuality communication they engage in with their sons by talking about more topics. This effort to discuss a broader range of topics may have appeared as receptivity, especially if the mothers asked a lot of questions. Support for the idea that mothers of boys asked a lot of questions comes from Lefkowitz et al. (2002), in which we found that in mother-son sexuality conversations, one person typically took the role of questioner. It is also possible that the mothers perceived the videotaped conversation as an opportunity to address issues with their sons that had not previously been talked about. Previous research has demonstrated that mothers do not discuss sexuality very often with their sons (DiIorio et al., 1999; Feldman & Rosenthal, 2000; Fisher, 1987; Rosenthal & Feldman, 1999). Perhaps these mothers took this opportunity to compensate for not having discussed sexuality very much in the past, and in encouraging their sons, were extra receptive. It is also possible that the topics mothers discuss with their sons make it easier for them to be receptive. More mothers of daughters have been shown to discuss societal concerns such as abortion and homosexuality than do mothers of sons, whereas mothers of sons are more likely to discuss sexual safety (Rosenthal & Feldman, 1999). Assuming it is easier to discuss sexual safety than abortion and homosexuality, such ease may be associated with greater receptivity.

Different patterns of association across gender were also found, suggesting that although most mothers displayed reasonably high quality communication, boys and girls may

react to mothers' communication differently. More daughters than sons of highly composed and highly responsive mothers endorsed strongly conservative sexual attitudes. In addition, more sons than daughters of highly composed and highly responsive mothers were sure about the protective abilities of condoms. Further, more daughters than sons of highly responsive mothers reported being highly anxious about AIDS. These patterns of association emerged from contingency analyses, and are based on relatively small sample sizes. Although caution must be used when interpreting these results, the pattern suggests that associations with mothers' communication style and quality may differ depending on the sex of their adolescents.

Adolescent Virginity Status

Though it was not possible to test for virginity status differences in the associations between mother-adolescent sexuality communication and adolescent sexual attitudes, exploratory analyses identified general differences between the groups and differences in patterns of association. The results of this study are consistent with previous work which has found that adolescents who experience comfortable, open and positive sexuality communication with their mothers are more likely to delay sexual intercourse (East, 1996; Kotchick et al., 1999; Leland & Barth, 1993; Mueller & Powers, 1990). In direct comparisons, the mothers of virgin adolescents were rated as more responsive and more receptive than the mothers of nonvirgins. This group difference raises the question of whether the mothers were aware of their adolescents' sexual behavior. Perhaps mothers are uncomfortable with their adolescents' sexuality, and therefore those who knew their adolescents were sexually active behaved differently than those who believed their

adolescents were not sexually active. The quality of mothers' communication may vary depending on the content of the conversation, and the content of mother-adolescent sexuality communication may vary depending on the mothers' knowledge of their adolescents' virginity status. Mothers of virgins may be more responsive and receptive because they talk about kissing or sexuality on television programs, while mothers of nonvirgins may be less responsive and receptive because they are discussing more difficult topics such as contraception and safer sex. There is also the possibility that the communicative behaviors of the virgin adolescents were different than those of the nonvirgins. For example, the nonvirgin adolescents, in an effort to hide their sexual behavior from their mothers, may have been less responsive and receptive themselves, eliciting similar communication from their mothers. Although the small sample size cautions against generalizing these findings, they do suggest directions for future research. Specifically, mothers' knowledge about adolescents' virginity status, and an examination of the content of mother-adolescent sexuality communication, may be important for understanding mothers' sexuality communication.

Virgins and nonvirgins were also found to have different sexual attitudes. In particular, virgins reported less anxiety about AIDS, and believed that they were less likely to get AIDS in the future, than did the nonvirgins. Adolescents who have had sex are more likely to perceive themselves as at risk for HIV infection (Sneed et al., 2001). Similarly, adolescents' tend to perceive themselves to be at greater risk when they have engaged in high risk behaviors (Reitman, St. Lawrence, Jefferson, & Alleyne, 1996). Thus, it is not surprising that the adolescents in this sample who have had sex were more anxious about AIDS and believed they were more likely to get AIDS in the future than did the virgins.

In addition, adolescents who were not virgins reported fewer barriers to condom use than did the virgins. Previous research has demonstrated that adolescents who are sexually active are less resistant to the idea of condom use (Grimley & Lee, 1997), and are more willing to carry condoms (Levin & Robertson, 2002) than are virgins. Thus, the nonvirgins may have acquired and used condoms in the past, and therefore, may be more certain of their abilities to do so. Further supporting this possibility is previous research demonstrating that adolescents with more favorable attitudes about condoms are more likely to use them (Romer & Stanton, 2003). These patterns of association were also found when examining just those adolescents whose mothers were evaluated as displaying high quality communication. Virgins whose mothers were highly composed reported more fear and anxiety about AIDS than did nonvirgins with similarly composed mothers. In addition, nonvirgins whose mothers were highly composed perceived fewer barriers to condom use than did the virgins whose mothers displayed high quality communication. Given that the patterns of association among those with highly composed mothers were the same as for the whole sample, it is not clear whether virginity status plays a role in the associations between mothers' communication and adolescent sexual attitudes. Further, the small sample sizes preclude generalizing from these findings. In future research, it may be informative to assess the extent to which the associations between mothers' communication and adolescent sexual attitudes vary depending on the adolescents' virginity status.

Limitations

This study was a first step in examining the role of adolescent psychosocial development in the relation between mother-adolescent sexuality communication and

adolescent sexual attitudes, and there were some limitations. First, due to the small sample size, there may not have been enough power to detect some associations. It will be important in future research to collect a larger sample.

Second, the gender distribution of the adolescents in the sample precluded assessing gender differences in the associations between mothers' communication and adolescent sexual attitudes. Although exploratory analyses were able to illustrate potential patterns, these findings must be interpreted with caution. Given that nearly three-quarters of the adolescents in the study were girls, the results presented here may be mostly applicable to girls. Similarly, the sample included mostly adolescents who had never had sex. As a result, it was not possible to examine virginity status differences in relations between mothers' communication and adolescent sexual attitudes. Because the majority—nearly three-quarters—of the adolescents were virgins, the results of this study may primarily apply to those adolescents who are virgins. In addition, the small sub-sample of adolescents who were not virgins prevented tests of the hypotheses with sexual behavior as the outcome variable. To the extent that virginity status and sexual activity may either mediate or moderate the associations between mothers' communication and adolescent sexual attitudes, it will be important to collect a sexually active sample in future research examining similar questions.

Another limitation of this study was the ethnic composition of the sample. Very nearly all of the families who participated were European American, reflecting the community in which data were collected. Thus, the study does not address families of other ethnic groups. It may be that the patterns of associations would be different for other ethnic groups.

Fourth, this study was purely correlational, which precludes drawing any causal conclusions from the results. In the future, it will be important to design studies that allow for examining the direction of effects between mother-adolescent sexuality communication, adolescent sexual attitudes, and adolescent psychosocial development.

A final limitation of this study is the possible non-representativeness of the sample. The mothers and adolescents in this study volunteered to participate. It may be that only families who are relatively comfortable with discussing sexuality volunteered. Another possibility is that the families who participated are especially comfortable with the idea of being involved in research. In either case, it is possible that the families who participated in the study are quite different from those who did not. Further, the mothers who participated may be different demographically from other families in Centre County, where the data were collected. For example, the median household annual income in Centre County is \$36,165, but the median income among the participating families was in the \$60,000 to \$80,000 range (Pennsylvania State Data Center, 2000). This suggests that the families who participated in the study are demographically different from families in the larger population of Centre County. Finally, there is the possibility that the adolescents in this sample differ from their peers in Centre County in other ways. For example, nearly two-thirds of the participating adolescents reported that they mostly receive grades of “A” or “A-“ in school. Perhaps adolescents with lower grades are less likely to volunteer for research for reasons that are also related to their sexual attitudes and behaviors. In addition, the fact that so few boys participated in the study suggests that the boys who did participate may differ from their peers in Centre County in some unmeasured way that also relates to their sexual attitudes and behaviors. Taken together, the apparent and potential differences between the participating

mothers and adolescents and other families in Centre County suggest that generalizations of the findings should be made with caution.

Future Research Directions

The results of this study suggest a number of future directions for research with the current sample and the data already collected. First, it would be possible to assess the contributions of both quality and quantity of mother-adolescent sexuality communication in predicting adolescent sexual attitudes. For example, in the context of the frequency of sexuality communication, the associations between the quality of mothers' communication and adolescent sexual attitudes could be assessed. Second, many of the unanswered questions raised by the null findings of this study may be addressed by reanalyzing the videotaped sexuality conversations at the level of topic and content of communication. Specifically, the quality of mothers' communication when discussing specific sexuality topics could be examined. For example, the quality of mothers' communication when discussing abstinence could be compared with the quality when discussing condoms. Alternatively, mothers could be grouped according to the topics they most frequently discussed, and the quality of communication within those groups could be compared. In addition, the specific content of the topics discussed could be examined. For example, mothers who discuss condoms might fall into two groups: one group that endorses the use of condoms, and another that warns their adolescents about the failure rates of condoms. These groups could then be compared on the quality of the sexuality communication exhibited by the mothers, on the sexual attitudes of the adolescents, and on the associations between these variables.

The results presented here also suggest future research with newly collected samples. First, placing the link between mother-adolescent sexuality communication and adolescent sexual attitudes within the larger context of the quality of the overall mother-adolescent relationship may shed light on these associations. Second, adolescent knowledge about sexual topics, and mothers' perceptions of that knowledge, may relate to both the quality of mothers' communication and adolescent sexual attitudes, and may be a mechanism that explains the associations between mothers' communication and adolescent sexual attitudes. As mentioned above, it will be important to assess the content of mothers' communication to truly understand these associations. It may also be important to examine the messages that the adolescents perceive their mothers are communicating during these interactions. In addition, assessing mothers' perceptions of their sexuality communication may provide additional insight into the mother-adolescent sexuality communication process, and may point to strategies for intervention. To identify relations between mothers' communication patterns and adolescent psychosocial development, future research may need to be consistent in the levels of specificity of those variables. For example, relations may be found if mothers' sexuality-specific communication is examined along with adolescents' sexuality-specific identity development. Relatedly, it may be important to clarify identity exploration and differentiate between current exploration and lifetime exploration.

Conclusions

Although many of the predictions were not supported, important findings did emerge from the study. The quality of mothers' sexuality communication did relate to important adolescent sexual attitudes, including perceived vulnerability to AIDS, perceptions of

barriers to condom use, and outcome expectancies for the protective abilities of condoms. Because these are sexual attitudes that may relate directly to adolescents' safer sex behaviors (Basen-Engquist & Parcel, 1992; Brown, DiClemente, & Reynolds, 1991; Strecher et al., 1997), these findings are important, despite the fact that these associations were in the direction opposite of that predicted. Mothers' sexuality communication—both observed and adolescent-reported—was consistently related to adolescents' perceived vulnerability to AIDS, suggesting that prevention programmers may be able to influence this important predictor of adolescent sexual behavior by modifying mothers' communication behaviors.

The associations found with mothers' observed communication were different from those found with adolescents' reports of mothers' communication. Both measures of mothers' communication were associated with adolescent sexual attitudes, but in different ways. Thus, collecting the reports of different sources when examining mothers' sexuality communication is important for capturing the full picture of the associations between mothers' communication and adolescent sexual attitudes. Relatedly, it was possible to group the mother adolescent-dyads according to their patterns of frequency and quality of sexuality communication, highlighting the importance of considering different natural tendencies among families when it comes to sexuality communication. Those natural tendencies may provide a leverage point for prevention programmers who aim to foster sexuality communication in families.

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APPENDICES

Appendix A

Relational Communication Subscales for Coding

(Burgoon, 1994)

1. Mother was highly involved in the conversation.
2. Mother appeared detached during the conversation.*
3. Mother acted bored by the conversation.*
4. Mother communicated coldness rather than warmth.*
5. Mother was willing to listen to her adolescent.
6. Mother was open to her adolescent's ideas.
7. Mother tried to establish rapport with her adolescent.
8. Mother felt very tense talking to her adolescent.**
9. Mother appeared comfortable interacting with her adolescent.
10. Mother acted like she was enjoying the conversation.

* Indicates items that were reverse scored.

**This item was dropped from analyses due to poor interrater reliability.

Appendix B

Adolescent Reports' of Mothers' Communication Quality

During Previous Sexuality Conversations

(Miller, Kotchick, Dorsey, Forehand, & Ham., 1998)

1. My mother tries to understand how I feel about topics like this.
2. My mother knows how to talk to me about topics like this.
3. My mother and I talk openly and freely about these topics.
4. My mother doesn't talk to me about these topics—she lectures me.
5. My mother doesn't know enough about topics like this to talk to me.
6. My mother wants to know my questions about these topics.
7. I can ask my mother the questions I really want to know about topics like this.
8. If I talked to my mother about these topics, she would think I'm doing these things.

Appendix C

Frequency of Mother-Adolescent Sexuality Communication

(DiIorio et al., 1999; Feldman & Rosenthal, 2000; Jaccard, Dittus, & Gordon, 1998)

1. Your physical development
2. Homosexuality
3. Menstruation
4. Abortion
5. HIV/AIDS
6. Safer sex
7. Sexually transmitted diseases
8. Contraception (birth control)
9. Sexual desire
10. Sexual pressure
11. Sexual satisfaction
12. Condoms
13. Choice of a sexual partner
14. Sexual intercourse

Appendix D

Conservative Sexual Attitudes

(Hudson, Murphy, & Nurius, 1983)

1. I think there is too much sexual freedom given to adults these days.
2. I think that young people have been given too much information about sex.
3. Sex education should be restricted to the home.
4. Extra-marital sex is never excusable.
5. I think there is too much sexual freedom given to teenagers these days.
6. I think there is not enough sexual restraint among young people.
7. In think people indulge in sex too much.
8. I think sex should be reserved for marriage.
9. People should not masturbate.
10. Heavy sexual petting should be discouraged.
11. People should not discuss their sexual affairs or business with others.
12. There should be no laws prohibiting sexual acts between consenting adults.*
13. What two consenting adults do together sexually is their own business.*
14. There is too much sex on television.
15. Pornography should be totally banned from bookstores.

* Indicates items that were reverse scored.

Appendix E

Perceived Vulnerability to AIDS

(Snell & Finney, 1996)

1. I feel scared about AIDS when I think about sexual relationships. (F)
2. I'm afraid of getting AIDS. (F)
3. I feel scared when I think about catching AIDS from a sexual partner. (F)
4. Because of AIDS, I feel nervous initiating sexual relations. (F)
5. All these discussions of AIDS leave me feeling a bit alarmed. (F)
6. Thinking about catching AIDS leaves me feeling concerned. (F)
7. Thinking about AIDS makes me feel anxious. (A)
8. I feel tense when I think about the threat of AIDS. (A)
9. I feel quite anxious about the epidemic of AIDS. (A)
10. I feel flustered when I realize the threat of AIDS. (A)
11. The disease AIDS makes me feel nervous and anxious. (A)

(F) = Fear of AIDS; (A) = Anxiety about AIDS.

Appendix F
Condom Attitudes

(Basen-Engquist et al., 1996)

1. I believe condoms should always be used if a person my age has sex.
2. I believe condoms should always be used if a person my age has sex, even if the girl uses birth control.
3. I believe condoms should always be used if a person my age has sex, even if the two people know each other very well.

Appendix G
Barriers to Condom Use

(Basen-Engquist et al., 1996)

1. It would be embarrassing to buy condoms in a store.
2. I would feel uncomfortable carrying condoms with me.
3. It would be wrong to carry a condom with me because it would mean that I'm planning to have sex.

Appendix H

Outcome Expectancies for Condom Use

(Jemmott & Jemmott, 1992)

1. Condoms can prevent pregnancy.
2. Condoms can prevent sexually transmitted diseases.
3. Condoms can prevent AIDS.

Appendix I

Adolescent Individuation

(Baik, 1997)

1. My mother really understands me. (C)
2. When I'm feeling bad, I can depend on my mother for emotional support. (C)
3. My mother expects me to follow her advice.* (C)
4. My mother and I feel emotionally close to one another. (C)
5. I am pleased with how my mother and I communicate. (C)
6. I tell my mother what I am thinking about things. (C)
7. My mother isn't very helpful when I have problems.* (I)
8. My mother tells me how to handle my life.* (I)
9. My mother shows me how much she loves me. (C)
10. My mother knows about what is important to me. (C)
11. My mother tells me what to do even if I don't want her to.* (I)
12. My mother is willing to help me when I ask her to. (C)
13. My mother is observant about things that bother me. (C)

* Indicates items that were reverse scored.

(C) = Connectedness; (I) = Independence from Parental Control

Appendix J

Adolescent Identity Development

(Balistreri, Busch-Rossnagel, & Geisinger, 1995)

1. I have definitely decided on the occupation I want to pursue. (C)
2. I don't expect to change my political principles and ideals. (C)
3. I have considered adopting different kinds of religious beliefs. (E)
4. There has never been a need to question my values. * (E)
5. I am very confident about what kinds of friends are best for me. (C)
6. My ideas about men's and women's roles have never changed as I became older. * (E)
7. I will always vote for the same political party. (C)
8. I have firmly held views concerning my role in my family. (C)
9. I have engaged in several discussions concerning behaviors involved in dating relationships. (E)
10. I have considered different political views thoughtfully. (E)
11. I have never questioned my views concerning what kind of friend is best for me. * (E)
12. My values are likely to change in the future. * (C)
13. When I talk to people about religion, I make sure to voice my opinion. (C)
14. I am not sure about what type of dating relationship is best for me. * (C)
15. I have not felt the need to reflect upon the importance I place on my family. * (E)
16. Regarding religion, my beliefs are likely to change in the near future. * (C)
17. I have definite views regarding the ways in which men and women should behave. (C)
18. I have tried to learn about different occupational fields to find the best one for me. (E)

19. I have undergone several experiences that made me change my views on men's and women's roles. (E)
20. I have consistently re-examined many different values in order to find the ones which are best for me. (E)
21. I think what I look for in a friend could change in the future. * (C)
22. I have questioned what kind of date is right for me. (E)
23. I am unlikely to alter my vocational goals. (C)
24. I have evaluated many ways in which I fit into my family structure. (E)
25. My ideas about men's and women's roles will never change. (C)
26. I have never questioned my political beliefs. * (E)
27. I have had many experiences that led me to review the qualities that I would like my friends to have. (E)
28. I have discussed religious matters with a number of people who believe differently than I do. (E)
29. I am not sure that the values I hold are right for me. * (C)
30. I have never questioned my occupational aspirations. * (E)
31. The extent to which I value my family is likely to change in the future. * (C)
32. My beliefs about dating are firmly held. (C)

* Indicates items that were reverse scored.

(C) = Commitment; (E) = Exploration.

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