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Abstract

African American adolescents continue to be at high risk for HIV and sexually transmitted infections (STIs). Sexual risk reduction efforts have focused on family-level sexual health communication, although they have yielded inconsistent findings. Using dyadic data from African American parents and their children ($n= 298$), the present study sought to elucidate the influence of sexual health communication on adolescent sexual behavior. Findings confirmed that adolescent reports of family-level sex communication were associated with greater sexual involvement, whereas parent reports of sexual health communication showed no associations to child sexual behavior. Including parent reports of communication did not enhance predictive models of adolescent sexual behavior beyond the variance explained by adolescent report. Congruence between parent and adolescent reports of sexual health communication was only moderate in the current sample. Further, communication report congruence moderated the association between communication and adolescent sexual risk. Among participants showing high congruence, sexual health communication was positively associated with adolescent condom use. Findings suggest that relational characteristics may influence the extent to which family-level sex communication is associated with sexual risk reduction and affirm the importance of family-level research as one approach to improving sexual health among African American youth.

Parent-Child Communication among African American Families: Does “Being on the Same Page” Protect Against Adolescent Sexual Risk Behavior?

by

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Dissertation

Submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in Clinical Psychology

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Dedication

To my parents, Frank and MaryBeth, and my brother, Christopher. None of this would be possible without you. I share the momentous end of this journey with you- the ones that instilled within me the faith and perseverance to embark upon and see it through; the ones that supported me through the greatest and the hardest of days; and the ones that cheered the loudest and celebrated each and every milestone along the way. 'Thank you' is not enough to convey my gratitude.

To my soulmate and best friend, Matt. None of this would be worth it without you. Now I share the next and greatest journey with you. I am overjoyed that the investment I made in my education will now contribute to the foundation of our family and our future. Thank you for bringing me such joy, for being my cheerleader in this endeavor, and vowing to be my cheerleader in every endeavor to come.

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My near decade of graduate training was graced with friendships that provided invaluable support, encouragement, and fun. I could not have asked for a more amazing group of people to share such a uniquely challenging and rewarding experience with. My thanks and love go out to Dr. Kelly Schwartz, Dr. Elizabeth Koenig, Dr. Jonathan DeRight, and Dr. William Aue who were there every step of the way.

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Parent-Child Communication among African American Families: Does “Being on the Same Page” Protect Against Adolescent Sexual Risk Behavior?

The HIV epidemic continues to disproportionately affect the African American community in the United States and African American adolescents in particular represent a high priority for HIV prevention efforts. According to the Centers for Disease Control and Prevention (CDC), approximately 70% of 13- to 19-year-olds newly diagnosed with HIV in 2011 were African American (CDC, 2011). In addition to HIV, African American adolescents are affected by other STIs at higher rates than other racial groups. For example, syphilis rates have held steady or declined among all ethnic groups except African American teens, among whom rates continue to increase. African American adolescents are also affected by chlamydia and gonorrhea at higher rates than their Caucasian counterparts. In the 15 to 19 year old cohort, African American boys are infected with gonorrhea approximately 30 times more often than Caucasian boys and African American girls have gonorrhea rates over 15 times greater than their Caucasian counterparts (CDC, 2012).

Socio-cultural factors have been implicated in the sexual health disparities among African American youth. Poverty, incarceration, poor access to health care, and general opportunity have been cited as placing urban African American community members at greater risk for engaging in sexually risky behaviors (German & Latkin, 2012). The poverty rate among African Americans in the United States is 28%, greater than any other ethnic group. Moreover, 42% of single-mother African American households are at or below the poverty line (DeNavas-Walt, Proctor, & Smith, 2012). High demand on basic needs such as housing and food may limit the capacity for community members to attend to matters of sexual health. Further, poverty and disadvantaged upbringing can contribute to increased opportunity for sexual risk behavior

observed among urban African American youth. Between high rates of school drop-out, difficulty maintaining employment, and parents and other community members burdened with providing basic necessities for their families, youth often experience more unsupervised, peer-facilitated social time. Such unstructured, unsupervised socializing provides increased opportunity for sexual behaviors (Adimora, Schoenbach, & Doherty, 2006).

Additionally, within the African American community, increased engagement in concurrent sexual relationships has been linked to increased spread of HIV/AIDS and other STIs (Carson & Sabol, 2012). Research confirms that having multiple sexual partners is strongly associated with increased vulnerability to HIV and other STIs (National Institutes of Health, 1997). Biologically, the presence of STIs can significantly increase one's chances of contracting and spreading HIV infection (Hayes, Watson-Jones, Celum, van de Wijgert, & Wasserheit, 2010). As such, the high prevalence of STIs and HIV within urban African American communities places its members at increased risk for contracting such infections (CDC, 2014). Socially, incarceration has been cited for the inflated STI risk caused by concurrent sexual partnerships within these communities. To illustrate, in 2013, 36% of prison inmates were African American, constituting the largest racial group incarcerated (Minton & Golinelli, 2014). Theoretically, when members of urban African American communities are removed from the population due to imprisonment, the frequency of concurrent sexual relationships is likely to increase due to fewer male members remaining in the community along with rising rates of partner-less female members. Given the disproportionate rates of infection and the multitude of risk factors facing this population, it is clear that the identification of effective intervention strategies for African American youth remains a high priority.

Parents serve as a primary source of sexual health education for their children (Klein et al., 2005) and evidence shows that adolescents prefer information on sexuality to come from their parents (Somers & Surmann, 2004). As such, a focus of adolescent sexual health research has been to characterize the influence of parental factors on adolescent sexual risk behaviors (Buhi & Goodson, 2007; DiIorio, Pluhar, & Belcher, 2003; Kotchick, Shaffer, Forehand & Miller, 2001). In general, research indicates that increased parent-child communication about adolescent sexual health is associated with greater knowledge and awareness of sexual health concerns (Coyle et al., 2001; Klein et al., 2005), greater overall relationship quality between parents and children (Martino, Elliott, Corona, Kanouse & Schuster, 2008), and greater willingness among youth to disclose information about sexual health concerns to parents (Boislard & Poulin, 2011; Jaccard, Dittus, & Gordon, 1996). Moreover, a number of studies confirm an association between parent-child communication and decreased adolescent sexual risk behavior (DiIorio et al., 2003; Dittus, Miller, Kotchick, & Forehand, 2004; Kirby & Miller, 2002; Wright, 2009). However, studies conducted to understand the association between parent-child communication and adolescent sexual risk have yielded inconsistent findings. Although many studies have indicated a positive relationship between increased communication and decreased risk behavior, others have yielded null findings, and a subset of studies have found results in the opposite direction than predicted, indicating greater communication is associated with greater sexual risk among adolescents (see e.g., DiIorio et al., 2003; Wright, 2009). Further, few studies have sought to clarify factors that may influence the strength of any observed association between parent-child sex communication and sexual risk behavior

An important but as of yet understudied hypothesis is that the source of data regarding parent-child sex communication may influence the strength of the relationship between

communication and adolescent self-reported sexual behaviors. Whereas some studies measure parent-child sex communication through the perspective of the parent, others rely on adolescent reports. The present study seeks to clarify the relationship of parent-child communication to sexual risk behavior among an at-risk population of African American youth. Using data from a health promotion study involving African American adolescents and their parents, the present study first characterizes the extent to which African American parents discuss sexual health matters with their children and the extent to which parents and children are in agreement with regard to the frequency of parent-child communication on sexual topics. Next, the independent and combined effects of parent- and adolescent-reported sex communication on adolescent sexual risk behavior are examined. Finally, this study tests the hypothesis that the level of parent and child agreement on the occurrence of sexual health communication will moderate the association between communication and adolescent sexual risk behavior. In so doing, this study provides clarification around the inconsistent findings in the literature and highlights the importance of adolescents *hearing* what their parents are reportedly *saying*.

The Role of Parent-Child Communication on Adolescent Sexual Risk: A Mixed Body of Evidence

Research on the association between parent-child communication and sexual risk dates back to the earliest days of the HIV epidemic (see e.g., Newcomer & Udry, 1985) and attention to the role of parenting has stimulated considerable interest in the use of parent-level interventions to reduce sexual risk behavior among young people (Bonafide & Venable, 2015; Sutton, Lasswell, Lanier, & Miller, 2014; Wight & Fullerton, 2012). However, research on the association of parent-child communication and adolescent sexual risk is far from conclusive. In what follows, the literature on parent-child sex communication and adolescent sexual risk is

reviewed. For illustrative purposes, the review is organized according to whether studies yielded positive results in which greater communication was associated with decreased adolescent sexual risk, null results, or inverse results in which greater communication was associated with increased risk behaviors.

Results Indicating a Positive Association between Parent-Child Sex Communication and Decreased Adolescent Sexual Risk

Discussions on sex and sexuality between parents and their children have been linked to safer sexual behaviors and decreased risk among adolescents. Over three decades of interest in this research question have resulted in a promising but unclear understanding of the impact of parent-child discussions about sexual health on adolescent sexual risk behaviors. Over half of empirical studies that have examined the link between communication and adolescent sexual risk have found a positive association between increased communication and decreased sexual risk among adolescents (DiIorio et al., 2003; Fisher, 2004; Miller, Benson, & Gailbraith, 2001).

Within the literature there has been considerable variability in the operationalization of parent-child communication as well as outcome measurement. In a review of studies examining parent-child communication on sexuality, DiIorio and colleagues (2003) organized the influence of parent-child communication on sexual risk into three categories of outcome variables: abstinence and delayed sexual behavior, increased likelihood of contraceptive use, and increased likelihood of disease prevention behaviors. Several studies reported positive results across multiple categories of sexual risk behavior. For example, Leland and Barth (1993) surveyed high school students and surveyed their conversations with parents regarding a number of sexuality topics. Students who reported discussing any sex-related topics with their parents were more likely to have remained abstinent, used condoms, and had fewer sexual partners. Holtzman and

Rubinson (1996) also recruited high school student respondents in their investigation of the impact of parental communication about HIV/AIDS on adolescent sexual risk behaviors. They specified risk behaviors as unprotected intercourse and number of lifetime sex partners. High school students who reported discussing HIV with parents or caregivers were significantly less likely to report multiple sex partners than those who reported no such discussions. Similarly, students who engaged in such discussions were less likely to have had unprotected sexual intercourse. Additionally, in a study of African American youth and their mothers, Jaccard and colleagues (1996) found that parent-child conversations about birth control were associated with greater contraceptive use among male adolescents. In their study, both mothers and adolescents were recruited for participation and administered separate questionnaires; however, only the adolescents responded to the series of questions on parent-child discussions about birth control.

More recent empirical studies have also confirmed a protective effect of parent-child communication on adolescent sexual risk. These studies have continued to vary in terms of chosen predictor and outcome variables. Teitelman and colleagues (2008) recruited African American and Hispanic girls who responded to questionnaires on parent-adolescent communication about general sexual risk as well as parent-adolescent communication about sexual pressure (e.g., how much did your parent tell you about peer pressure in relation to sex?). Only one of the seven items in the general sex communication scale yielded a significant effect: maternal discussions on waiting to have sex were associated with more frequent and consistent STI/HIV prevention practices (e.g. condom use) among daughters. However, communication about sexual pressure showed a greater effect on adolescent sex behaviors. Girls were twice as likely to practice abstinence or consistent condom use if they talked with their mothers about a variety of sexual pressure situations.

Although some studies have specified safer sex behaviors as primary outcomes, others have focused on risk behaviors. For example, in a study of female African American adolescents, primary outcome measures included three risk behaviors over the past three months: number of male sex partners, episodes of sexual intercourse, and days of unprotected intercourse (Hutchinson, Jemmott, Jemmott, Braverman, & Fong, 2003). Participants also answered a series of questions related to mother-daughter sexual risk communication. Hutchinson and colleagues (2003) found that higher levels of mother-daughter communication were associated with fewer episodes of sexual intercourse and fewer days of unprotected intercourse.

Though many studies in the past decade have focused on female adolescent samples due to the unique sexual consequences of pregnancy and increased STI vulnerability, a number of studies have utilized mixed gender samples (Aspy et al., 2007; Buzi, Smith, & Weinman, 2009; Fasula & Miller, 2006; Mueller et al., 2010; Stanton et al., 2002). Stanton and colleagues (2002) conducted a prospective study with urban African American adolescents who were participating in a sexual risk reduction program. The adolescents answered a series of questions regarding involvement in sexual risk and protective behaviors as well as general risk behaviors (e.g. drug use). They also responded to items assessing “open” and “problem” communication with parents. “Open communication” was conceptualized as trusting, comfortable conversations whereas “problem communication” represented non-supportive, uncomfortable conversations. Regression analyses revealed that from baseline through 18 months of follow up, positive parental communication was associated with greater condom use. It is of note that the indices of communication used assessed general communication without specifically addressing topics of sexual health or sexuality.

Other studies have similarly relied on general measures of parental communication. For example, Aspy and colleagues (2007) sought to clarify the influence of parent's role in youth sexual risk behavior using two scales related to communication: general family communication and family communication about sex. Both parents and adolescents independently completed the two communication scales and their responses were analyzed separately. Interestingly, when adolescents reported parental discussions on delaying sex, they were less likely to have had sex. This finding did not hold when analyzed per parent report of communication. The researchers then further investigated the impact of communication among sexually active adolescents only. Both parent and adolescent reports of family communication about sex predicted birth control use and STI prevention measures among adolescents at last sexual encounter.

Summary. Collectively, the reviewed studies provide some evidence to support a link between safer sexual behaviors among adolescents and parent-child communication about sexual health. Study methodologies vary considerably in terms of how family level communication is measured. Additionally, outcome measures vary widely, ranging from dichotomous indices of sexual activity to episodic reports of specific sexual behaviors. Inconsistent findings within this literature call attention to the methodological variability that exists. This is most highlighted by the notable group of studies that did not find a relationship between family-level communication and adolescent sexual behavior. Next, studies resulting in null findings are discussed.

Results Indicating No Association between Parent-Child Sex Communication and Decreased Adolescent Sexual Risk

Approximately one-third of studies examining the relationship between parent-child communication about sex and adolescent sexual behavior have failed to confirm an association between the two factors (DiIorio et al., 2003; Fisher, 2004; Miller et al., 2001). Studies that have

yielded null results have also varied widely in their method of assessing parent-child discussions of sexual health as well as adolescent sexual risk. For example, several studies from early in the HIV epidemic assessed parent-child communication about sexual health from the adolescent perspective (Fisher, 1993; Handelsman, Cabral, & Weisfeld, 1987; Hovell et al., 1994; Liebowitz, Castellano, & Cuellar, 1999). Hovell and colleagues (1994) sought to clarify the relationship between familial influences and sexual development among Anglo and Latino adolescents. In a private interview, adolescents were asked a graded series of yes-or-no questions on their sexual experience, ranging from no sexual activity to oral, anal and vaginal intercourse. They were also asked about the occurrence of recent family conversations and mother-only conversations regarding sex. Bivariate analyses indicated no significant relationship between parent-child sex communication and adolescent sexual activity. Additionally, Handelsman and colleagues (1987) failed to find support for their hypothesis that communication with parents would be associated with responsible sexual behavior. No differences between sexually active adolescents and non-sexually active adolescents in their sample emerged with respect to reported parental communication.

More recent studies have also yielded null findings. A study of urban fifth-grade students and their parents sought to examine parenting behaviors and risky sexual and health behaviors (e.g., drinking, drug use) among adolescents (Koo, Rose, Bhaskar, & Walker, 2012). Despite the fact that the modal age of the sample was 10 years old, 10% of the youth surveyed reported having had sex and an additional 39% anticipated engaging in intercourse within the next year. The researchers used an outcome measure of students' risk behavior by summing dichotomous measures of virginity status, anticipated sexual activity over the next 12 months, and involvement in other risk behaviors. Parent-child communication about sexual topics was

measured through a parent questionnaire. Regression analyses found that none of the parental communication variables predicted adolescent risk behavior. However, parents who reported having sex-related conversations with their child were more likely to have a child who reported engaging in other risky health behaviors (e.g., drug use). This finding raises the possibility that, at least for some families, concern about sexual behavior may motivate parents to initiate conversations about sex. This is in contrast to the frequent expectation that parents introduce sexual health communication prior to their child engaging in any sexual behavior.

DiIorio and colleagues (2006) recruited a young cohort for a longitudinal study on sexual initiation. The researchers assessed sexual behaviors among African American adolescents at baseline, 4, 12 and 24 months. The adolescents responded to a series of yes-or-no questions about sexual behaviors preceding intercourse, which ranged from holding hands to touching genitals. Initiation of sexual intercourse was also queried with one dichotomous item. Adolescents additionally answered twelve questions about discussing sexual topics with their mothers. Logistic regression analyses showed that mother-child sex communication had no effect on adolescent sexual intercourse initiation. Interestingly, greater mother-child sex communication did predict less pre-intercourse sexual behavior (DiIorio, McCarty, Dezmores, & Landis, 2007). It is of note that these two studies recruited younger cohorts (mean ages 10 to 13 years old) and utilized measures focusing on sexual activity status rather than sexual risk behavior.

Cohort studies enrolling older adolescents typically employ direct measures of condom use and related sexual risk behaviors. In a large study of sexually active youth, Huebner and Howell (2003) investigated the association of parenting style, parental monitoring and parent-child communication to adolescent sexual risk taking. Of the three independent variables, only

perceived parental monitoring emerged as a significant predictor of adolescent sexual risk behavior. Sexual risk was operationalized as multiple sex partners and unprotected intercourse at last sex. Likewise, Henrich and colleagues (2006) used a large, representative sample to investigate the protective roles of parents and friends on adolescent sexual risk over time. Parent-child communication was assessed through parent responses to a series of questions. Adolescents responded 'yes' or 'no' to engaging in five sexual risk behaviors: never using a condom, drinking during sex, using drugs during sex, having sex for drugs or money, and early onset of sexual activity. No main effects for mother-child communication on adolescent sexual risk for any of the behaviors were found.

Summary. A substantial number of studies have failed to confirm an association of family-level sex communication to adolescent sexual risk behavior. Mixed findings affirm the need for research that clarifies factors that may influence the extent to which parent-child sex communication influences adolescent sexual behavior. Adding to the complexity of the literature are a subset of studies that point to an inverse relationship between parent-child communication and adolescent sexual risk, such that parent communication is associated with increased sexual risk behavior. In the following section, this group of studies is briefly summarized.

Results Indicating a Negative Association between Parent-Child Sex Communication and Decreased Adolescent Sexual Risk

A small but noteworthy subset of studies points to a negative association between parent-child sex communication and decreased adolescent sexual risk behavior. In an early study, Ward and Wyatt (1994) recruited 18 to 36 year old female participants for a retrospective study in which participants were asked to recall sexual experiences chronologically, beginning in childhood. They were also prompted with open-ended questions such as, "What was said to you

about premarital intercourse?” in an effort to ascertain the content and tone of their early parental communication about sex. The researchers found that among Caucasian women, those who recalled negative sexual messages were more likely to have engaged in risky sexual practices. Although retrospective accounts may be hindered by false memory confounds, a possible explanation for the findings is that parents who perceived their daughters to be sexually active might have initiated authoritative conversations to encourage abstinence or safer sexual behaviors.

Other studies yielding inverse findings have utilized cross-sectional designs and bivariate analyses. Somers and Paulson (2000) sought to assess family-level communication more comprehensively than had previously been done. They surveyed adolescents on their perceptions of parental communication on 20 different sexual topics (e.g. pregnancy, intercourse). Adolescents also responded to 18 questions regarding sexual behaviors and experiences. Analyses revealed that greater reported parental communication was associated with greater reported sexual behaviors. The researchers noted that age was also significantly related to both communication and sexual behavior and posited developmental changes as one possible explanation for the unexpected findings. Older adolescents and their parents engaged in more communication about sex and adolescents demonstrated more sexual activity. This again suggests that parents may initiate communication when they suspect their child is considering sexual activity. That is, as adolescents grow older, parents may perceive greater need for an open dialogue on safe sexual practice.

Most recently, researchers have reported on data from the National Longitudinal Study of Adolescent Health (Add Health), a large-scale study involving a representative sample of adolescents from the United States (Davis & Friel, 2001; Deptula, Henry, & Schoeny, 2010;

Gillmore, Chen, Haas, Kopak, & Robillard, 2011; Khurana & Cooksey, 2012; McNeely et al., 2002; Pearson, Muller, & Frisco, 2006; Lam, Russell, Tan, & Leong, 2008). Findings from this data set again point to a negative association between parent-child sex communication and decreased adolescent sexual risk behavior. For example, Pearson and colleagues (2006) tested the effects of parental involvement on sexual debut. They found that among parents reporting frequent sex-related discussions with children at baseline, adolescents were 16% more likely to have initiated sex at one year follow up in comparison to adolescents who did not have frequent conversations with their parents about sexual health.

Using the same baseline data of adolescent sexual risk behavior and parent reports of communication, Deptula and colleagues (2010) found that greater discussion of the negative consequences of sex predicted initiation of sexual intercourse and decreased rates of adolescent condom use. Lastly, Khurana and Cooksey (2012) used adolescent data from baseline and a third wave of assessment, collected five to six years post-baseline. Analyses revealed a main effect for maternal communication on number of sexual partners, indicating that greater communication (one unit increase in frequency) was associated with a 6% increase in lifetime number of sexual partners. Greater frequency of maternal communication was also significantly associated with greater likelihood of inconsistent condom use over the previous 12 months.

Summary. In addition to the null findings described previously, several studies report a negative association between parent-child communication and decreased sexual risk. Of note, many of the studies finding an inverse relationship have utilized parent reports of sex communication, highlighting the potential importance of data source. If parents suspect that their children are sexually active, they may initiate sexual health communication. Additionally,

despite the fact that more recent research designs benefit from more comprehensive predictor and outcome measures and more advanced analytic strategies, methodological limitations remain.

Interpretation of study findings is challenging due to the wide variability in assessing parent-child communication. Many studies have assessed parent-child sex communication by asking about the frequency of parental discussions on a number of sexual health topics including when to initiate sex, birth control, STIs and HIV/AIDS, condom use, and pregnancy (Buzi et al., 2009; DiClemente et al., 2001; Fisher, 1986; Hutchinson et al., 2003; Miller et al., 1998; Rodgers, 1999; Somers & Paulson, 2000). Other studies have employed measures of the quality of parent-child sex communication rather than the frequency of communication (Kotchick et al., 1999; Leland & Barth, 1993; Miller et al., 1998; Newcomer & Udry, 1985; Sneed, 2008). Still other studies report on measures that target general communication between parents and children (e.g. if communication is positive or problematic within the family), as well as more general constructs of the parent-child relationship within which communication is included (Fasula & Miller, 2006; Stanton et al., 2002; Vesely et al., 2004; Yang et al., 2007; Young & Vasonyi, 2011).

Inconsistent measurement in parent-child communication has not only been hampered by inconsistent assessment tools, but by varying sources of data. Studies conducted in this area have varied in their use of parent reports of communication and adolescent reports of communication. An important and understudied question concerns whether data source of parent-child communication assessment (parent versus child) influences the strength of the relationship between communication and sexual risk behavior. Do empirically based findings on the relationship between communication and sexual risk depend on whether the parent or the adolescent is reporting on such discussions? Relatedly, is congruence between parent and

adolescent reports of communication influential in determining the degree to which family-level communication impacts sexual behavior outcomes?

Emerging Research Priorities: Clarifying the Influence of Parent-Child Communication

Data Source on Adolescent Sexual Risk

A novel approach to studying the association between parent-child communication and adolescent sexual behavior involves investigating the role of data source in communication assessment. With respect to research design and analytic strategy, data derived from parent and adolescent reports of communication represent related but notably distinct variables of interest. Empirical findings, as described below, indicate that parent and adolescent reports on sexual health discussions are not as highly correlated as may be expected. Further characterization of parental perceptions of sex communication, compared to adolescents' perceptions of the same conversations is called for. The discrepancy between parent and adolescent reports of sex communication may be of central importance in evaluating and improving upon this literature.

The Discrepancy Between Parent and Adolescent Reports of Sexual Health

Communication

Researchers often refer to parent and adolescent reports of communication as though they are interchangeable constructs. This is a concern since research indicates that parent and adolescent perceptions of sexual health communication are often incongruent. As described below, parent and child reports on frequency of sex communication are only moderately correlated. Moreover, parents and adolescents have been found to interpret conversations differently (Guilamo-Ramos et al., 2006; Hartos & Power, 2000), with parents believing communication occurs more frequently, openly, and effectively than their children report (Noller, Seth-Smith, Bouma, & Schweitzer, 1994; Xiao, Li & Stanton, 2011).

A number of studies have found high rates of incongruence between parent reports and child reports of parent-child sex communication (Hadley et al., 2009; Kapungu et al., 2010; Miller, Kotchick, Dorsey, Forehand, & Ham, 1998; Miller et al., 2011; Newcomer & Udry, 1985). DiIorio and colleagues (2003) reported that, across 56 reviewed studies, the average percentage of parents reporting that they had ever talked to their children about sex was 85%. In contrast, only an average of 48% of adolescents responded affirmatively to the question of whether their parents had ever spoken to them about sex. Similarly, a study that sought to characterize parent and adolescent perceptions of sex communication found that reports of global communication (e.g. "Have you ever talked about sex?") differed greatly by data source with 72% of mothers endorsing 'strongly agree', while only 45% of their children strongly agreed to the same item (Jaccard et al., 1998).

Research has also sought to describe congruence between parents and adolescents with respect to specific sexual health topics. Miller and colleagues (2011) found that parent- child affirmative concordance rates on the topics of HIV/ AIDS, abstinence, and condoms were only 44, 48, and 22 percent, respectively, indicating that small to moderate proportions of parent-child dyads agreed that such conversations had ever taken place. Similarly, an intervention study with African American teenagers and their mothers utilized a 17-item discussion list of sexual health topics (Kapungu et al., 2010). An incongruence score was calculated, with higher scores indicating greater incongruence in the dyadic responding. Descriptive analyses demonstrated that the highest level of incongruence (greater than 50%) occurred between mothers and sons on the topics of when to have sex, what sex is, the dangers of multiple partners, and the benefits of waiting to have sex. The lowest rates of incongruence among dyads occurred between mothers and daughters on the topics of using a condom (23%) and preventing pregnancy (26%).

Additionally, Jaccard and colleagues (1998) assessed frequency of parent-child communication on 14 specific sexual topics (e.g., AIDS/STDs, pregnancy) through mother and adolescent reports. Not only did mothers report greater overall sex communication than did adolescents, weak correlations emerged between mother and adolescent reports of discussing the varying topics (range $r = .07 - .28$). Similarly, Hadley and colleagues (2008) gave parent and adolescent participants a list of six sexual behavior topics (e.g. condoms, birth control, choosing sexual partners) to which they responded 'yes' or 'no' to having discussed. The highest level of agreement was for discussing condom use, which still emerged as only moderately associated ($\kappa = .28$).

In summary, parent and adolescent perceptions of conversations regarding sexual health often differ. As such, measurement of parent-child sex communication should account for this discrepancy. However, this very rarely has been addressed in the literature. A critical next step for this research area is to clarify whether data source, as well as report congruence between the two sources of data, can influence the strength of the relationship between parent-child communication and adolescent sexual risk.

The Potential Influence of Data Source

To clarify whether data source may influence research findings, studies conducted since 2000 were classified based on whether assessment of parent-child sex communication was provided by the adolescent, the parent, or both. Table 1 provides a summary of findings. Of note, for studies in which data is based on parent reports, none found a significant association between parent-child sex communication and decreased adolescent sexual risk behavior. In contrast, half of the reviewed studies utilizing adolescent reports of communication found that greater

communication was associated with lower rates of sexual risk taking. The bulk of mixed findings emerged among studies utilizing both parent and adolescent reports of communication.

With respect to data source, the largest collection of studies conducted since 2000 has utilized adolescent report of parent-child sex communication. Among the 21 studies, ten found no relationship between parent-child sex communication and adolescent sexual risk. However, 11 indicated a significant relationship between increased family-level sex communication and decreased sexual risk behaviors among adolescents.

Table 1 also provides an overview of studies conducted since 2000 that have relied on parent reports of parent-child sex communication. Among 11 studies with parent-only reports of communication, no significant findings in the expected direction have emerged. That is, over the past decade, none of the studies that utilized parent report of family-level communication have found it to be associated with decreased adolescent sexual risk. In fact, approximately half of these studies ($n=6$) report significant effects in the *opposite* direction than predicted, indicating that increased communication is associated with increased sexual risk among adolescents.

Lastly, a small subset of recent studies ($n=3$) on parent-child sex communication and adolescent sexual risk utilized both parent and adolescent respondents in assessing communication. Findings from this group of studies are mainly mixed due to separate analyses finding a positive association between communication and decreased sexual risk behavior per adolescent report and a negative or nonexistent association per parent report (Hadley et al., 2009; Kapungu et al., 2012). Such analytic approaches preclude drawing conclusions on the combined effect of parent and adolescent reports of communication.

Summary. The current review of recent studies on parent-child communication and adolescent sexual risk reveals a pattern that suggests data source plays an important role in this

line of research. Evidence indicates that adolescent reports of sex communication result in significant findings regarding its impact on adolescent risk behavior more frequently than parental reports. However, studies with adolescent respondents have still resulted in inconsistent findings. Including both parents and adolescents as respondents in communication assessment may provide the best source of data. Analytic strategies that continue to independently test parent and adolescent reports fail to overcome extant limitations of earlier research designs.

It is well documented that parent and child reports of sexual health discussions do not frequently converge (DiIorio et al., 2003; Miller et al., 2011). An important research priority is to clarify whether the level of agreement between parent and child reports of communication influences the strength of the relationship between communication and sexual risk behavior. A hypothesis explored in the present study concerns whether adolescents who are “on the same page” as their parents regarding sex-related discussions experience greater protective benefits in terms of behavioral decision making.

Purpose of the Present Study

The present study addresses the limitations of extant research on parental influence on adolescent sexual risk behavior. While considerable research has been conducted on parent-child communication with respect to adolescent sexual health, the findings remain mixed. A critical next step is to examine the role of data source (parent vs. child) in clarifying the impact of parent-child sex communication on adolescent sexual risk behavior. Using baseline data from an intervention study involving African American parent-child dyads, the present study sought to overcome these limitations and extend the literature.

The primary aims of this study are to (a) describe the frequency of parent-child communication around sexual health topics based on both adolescent and parent reports, (b)

describe the congruence of parent and adolescent reports of such communication, (c) test the independent effects of parent-reported and adolescent-reported sex communication on adolescent sexual risk behavior, (d) test the combined effects of both parent and adolescent communication report on sexual risk behavior and compare variance accounted for, and (e) test a predictive model of family-level sexual health communication on adolescent sexual risk using congruence of parent and adolescent communication reports as a moderator variable.

The first aims of the study, to describe the frequency of parent-child sex communication and the congruence of communication reports between parents and adolescents, are descriptive in nature. Dyadic data are rarely reported on in the context of family-level communication and adolescent sexual health. As such, descriptive findings will provide a valuable contribution to the literature. Regarding the second aim, it was predicted that adolescent reports of sex communication would be associated with sexual behavior in that greater communication would predict lower rates of sexual risk. In contrast, it was predicted that parent-reported sex communication would not be associated with adolescent sexual risk. Based on these predictions for independent models, a follow up aim sought to clarify whether including parent-level data would enhance predictive models and account for greater variance in adolescent sexual risk, above and beyond that accounted for by adolescent-report data.

Lastly, it was hypothesized that a congruence score, reflecting the degree of agreement between parent and adolescent reports of sex communication, would moderate the effect of communication on adolescent sexual risk behavior. It was expected that both adolescent and parent reports of sex communication would be most strongly associated with sexual behavior outcomes when a high level of congruence between the parent and adolescent reports of sex communication was present.

Method

The data used in this study was collected as part of a larger health behavior study focusing on African American parents and their adolescent children. The parent study sought to identify barriers to human papillomavirus vaccine uptake among female adolescents. A wide array of sexual health measures were administered through parallel parent and child questionnaires. The present study makes use of data concerning parent and adolescent reports of parent-adolescent communication on a variety of sexual health topics, as well as adolescent self-report of sexual risk behaviors.

Participant Recruitment

African American parents with an adolescent daughter or son (ages 11 to 17 years) were recruited from the Syracuse community, a medium sized city in central New York. Flyers and direct mailings were distributed through partnerships with community-based organizations and the area housing authority. Additionally, respondent driven sampling (RDS) was employed as a means of reaching participants who would not otherwise be aware of the study opportunity. Respondent driven sampling procedures consisted of giving parent and adolescent participants referral cards upon study completion. If either or both the parent and adolescent distributed the referral card to a friend who proceeded to participate in the study, the referring party was given \$5 to compensate them for their effort.

Participant Characteristics

Two hundred and ninety-eight parent-child dyads participated in the study. Parents could only participate one time with one child. The majority of parents in the sample were mothers (90%). Sixty-one percent of parents were participating in the study with their daughter and 39% with a son. The average parent age was 40 years old. Just over half of parents (54%) reported

being single, 21% were married, and the remaining 25% reported they were separated, divorced, or widowed. Study inclusion criteria indicated that the participating adolescent needed to self-identify as African American. Subsequently, most parents self-identified as African American (89%) with the remainder indicating they were white (4%) or multiracial (7%). With regard to parent education, 35% reported completing high school or earning a GED, 29% having attended some college, 13% having graduated with a college degree, and 24% having not graduated high school. Approximately half of parents (58%) reported that they were employed at the time of study participation. Additionally, 46% of parents reported an annual family income of less than \$15,000 per year, with most reporting less than \$45,000 per year (94%). Per parent report, 86% of the adolescents were enrolled in their school's free lunch program.

Among adolescent participants, 61% were female. The average age of the adolescent participants was 14 years old. Eighty-six percent of the adolescents self-identified as African-American while the remaining 14% identified as multi-racial. Most lived with their mother (86%), and only 19% reported having a father in the home. On average, adolescents had two brothers and three sisters. Educationally, adolescents were enrolled in grades four through twelve and generally endorsed earning grades of B's (43%) and C's (35%). The majority of adolescents envisioned their educational path to include attending college or trade school (32%) and earning an advanced degree (e.g. medical, law; 60%).

Procedure

Parent and adolescent pairs participated in the study at an accessible, storefront, urban research office. Adolescents and parents were directed to separate rooms to reduce confidentiality concerns in responding to survey items more personal in nature. Both parents and adolescents were consented by a trained research assistant and oriented to the audio computer-

assisted self-interviewing (ACASI) survey administered on an individual laptop. The survey was designed and programmed using MediaLab software (Jarvis, 2005). Research findings suggest that ACASI methods are equal to or better at eliciting participant openness in reporting health behaviors than other self-report measures (e.g., Robinson & West, 1992; Schroder, Carey, & Venable, 2003; Turner et al., 1998). The parent and adolescent surveys were comprised of parallel items assessing background characteristics, general health behaviors, STI knowledge, STI risk, and parent-child communication and behaviors around sexual health. Measures included in the present study are more thoroughly described below. Adolescent and parent surveys were completed in separate rooms to reduce confidentiality concerns among adolescent participants. Adolescent and parent participants were each paid \$25 to complete the survey as compensation for their time and participation. Following completion of the survey, parent and adolescent participants were debriefed, offered their monetary compensation, and thanked for their time.

Measures

Demographics and background characteristics. Parent and adolescent participants completed a demographics questionnaire inquiring about age and self-identified race/ethnicity. Parents also provided information on education level, annual income, marital status, how many persons living in the home, and specified their relationship to the child taking the survey. Adolescents provided background information on their household including number of siblings, their achievement in school, and their religious observance (see Appendix A).

Parent-adolescent sex communication. Parents and adolescents responded to parallel items querying the frequency of engagement in conversations regarding sexual health behaviors (see Appendix B). The measure was adapted from previous studies (DiIorio, Kelley, &

Hockenberry, 1999) and included nine items. Questions asked how often the parent/ child talked to the other about: STDs, AIDS, using a condom, dating, teen pregnancy, multiple sex partners, perceptions of teen sex, birth control, and the “facts of life” such as pregnancy. Participants rated their response using a 4-point Likert scale (1= not at all; 4= quite a bit). The scale had high internal consistency (parent-report: $\alpha = .94$; adolescent-report: $\alpha = .93$).

Composite scores were computed by separately summing the responses for parents and then for adolescents. Additionally, a congruence score was computed to represent the difference between parent and adolescent report of communication on the nine sexual behavior topics. Because the research question only concerns magnitude of agreement, not the direction of incongruent responses, the congruence score was calculated by taking the absolute value of the difference between the parent communication score and the adolescent communication score.

Sexual risk behavior. Lifetime sexual and risk behaviors were assessed among adolescent participants using items adapted from a previous study (Vanable et al., 2009). Current guidelines point to the importance of assessing sexual risk behavior via both count measures of unprotected intercourse occasions and relative frequency measures that assess the proportion of sexual occasions involving condom use (DiClemente et al., 2001; Schroeder, Carey, & Vanable, 2003). For studies involving adolescents, it is also important to include an assessment of developmentally appropriate non-penetrative sexual behaviors. Hence, for the current study, four primary outcome measures were used: (a) non-coital intimate behaviors, (b) sexual activity status, (c) number of occasions of unprotected sex, and (d) relative frequency of condom use.

Non-coital Intimate Behaviors. Given that that our study included youth as young as 11 years old, we created an index score of other intimate behaviors to assess level of behavioral involvement. Adolescent participants were asked four yes (1) or no (0) questions regarding a

range of non-penetrative sexual behaviors, including ‘making out’, sexy dancing, and touching private parts (see Appendix C). The index was computed as the sum of the behaviors endorsed.

Sexual activity status. Sexual activity status was assessed through a single yes (1) or no (0) item asking if the adolescent had ever engaged in vaginal sexual intercourse across their lifetime.

Number of occasions of unprotected sex. Study findings addressing the occurrence of unprotected sex focused on youth who reported a lifetime history of vaginal sex ($n=125$). Given memory and reporter bias confounds, research indicates that measures of recent sexual activity provide more valid assessment of sexual risk and that three month retrospective reports offer as reliable a count as a one-month reference interval (Schroder et al., 2003). Hence, count data on occurrences of unprotected sex was obtained using an item that asked how many times, in the past three months, the adolescent engaged in vaginal sex without using a condom.

Relative frequency of condom use. Relative frequency of condom use over the past three months was assessed using an item that asked adolescent participants, “How often would you say that you and your partner used a condom from start to finish when you had vaginal or anal sex?” Participants endorsed frequency on a 6-point Likert scale ranging from *never* (1) to *every time* (6).

Statistical Analyses

Descriptive analyses. Demographic characteristics of the sample can be found in Tables 2 (parent characteristics) and 3 (adolescent characteristics). Before primary analyses were conducted, frequencies for all included variables were examined to identify the range of reported values, missing data, and outliers. The predictor variables of parent-reported sex communication, adolescent-reported sex communication, and communication congruence score were inspected

for assumptions of linearity, independence, homoscedasticity, and normality. Summary statistics can be found in Table 4. The same was completed for the adolescent sexual behavior outcomes of interest. The presence of outliers was addressed when they introduced significant bias to the data as indicated by a z-score > 3.29 . For one of the outcome variables, number of occasions of unprotected sex, two outliers were identified and subsequently truncated by replacement with a value one unit larger than the next most extreme score in the distribution (Schroder et al., 2003a; Tabachnick & Fidell, 2001). Data transformations were not effective in improving highly positively skewed distributions for the same count outcome variable and thus, appropriate regression modeling was employed, as described below. Descriptive information on each outcome variable can be found in Table 5.

Association of demographic variables to outcome variables of interest. From a developmental perspective, age was considered to be theoretically related to the sexual behaviors of interest. Engagement in sexual behavior is a graduated process. The range and frequency of sexual behavior increases, in part, as a result of maturation and aging (Friedrich, Grambsch, Broughton, Kuiper, & Beilke, 1991; Jessor & Jessor, 1977). In the current sample, age was highly correlated with adolescent reports of engaging in non-coital intimate behaviors, having had sexual intercourse, and number of recent unprotected sex occasions ($ps < .01$). For relative frequency of condom use, an outcome that was relevant only to adolescents reporting recent intercourse, male participants endorsed greater condom use frequency than females ($t(94) = 3.15$, $p < .01$).

No other parent or child demographic variables were found to be significantly related to study outcomes. Age was therefore entered as a covariate for analyses focusing on non-coital

intimate behaviors sexual activity status, and number of unprotected sex occasions. Gender was included as a covariate for the model testing relative frequency of condom use.

Primary data analyses. To address the first and second aim of the present study, to characterize family-level sex communication between African American parents and their children, summary statistics for parent-reported communication, adolescent-reported communication, and communication congruence were obtained. They are presented in Table 4.

To address the third study aim of testing the independent effects of parent-reported and adolescent-reported communication on adolescent sexual risk, regression analyses were conducted. Multiple linear regression was used for the continuous outcome variables of non-coital intimate behaviors and relative frequency of condom use. Binary logistic regression was used for the dichotomous outcome variable of sexual activity status. To test the independent effect of parent- and adolescent-reported sex communication on adolescent report of unprotected sex occasions, a Poisson regression was initially considered given that count data in the present study had a high proportion of zero counts (Cameron & Tivedi, 2013). However, goodness of fit indices indicated poor model fit (Deviance= 5.0, AIC= 1687.2). Therefore, a negative binomial regression model with log link was used instead and demonstrated a significantly better fitting model (Deviance= 1.9, AIC= 646.3). Additionally, a count variable of total vaginal sex occasions (protected and unprotected) was entered into the negative binomial regression as a covariate. Total sex occasions was controlled for in order to isolate the psychological component of adolescent unprotected sex (e.g., number of times not using a condom relative to total number of opportunities to make such a decision). Separate predictor models were conducted for parent-reported communication frequency and adolescent-reported communication frequency.

Hierarchical regression analyses were used to address the fourth study aim, clarifying whether the inclusion of parent-report data enhances the predictive ability of models that include adolescent-reported communication on sexual risk outcomes. Age was again used as a covariate for analyses of non-coital intimate behaviors, sexual activity status, and number of unprotected sex occasions, and gender was included as a covariate for the analysis focusing on relative frequency of condom use. Hierarchical linear and logistic regression models were used and all results were interpreted at a 95% confidence ($p < .05$) level. Each model included the determined covariate at step 1, the independent predictor variable of adolescent-reported sex communication at step 2, and the addition of parent-reported sex communication at step 3. Using omnibus tests, chi-square and F change statistics that indicated model fit were examined. The shared variance accounted for by including both parent- and adolescent-reported communication was compared to the individual variance accounted for by adolescent-only reported communication using the above statistics.

Moderation analyses. Hierarchical regression models were also used to examine the final hypothesis that the congruence between parent and adolescent reports of sex communication would moderate the association between family-level communication and adolescent sexual behavior. To test for moderation, product terms were computed by multiplying the congruence variable and each independent variable (communication frequency). Covariates were entered at step 1, and the main effects of communication frequency (parent- or adolescent-reported) and communication report congruence were entered at step 2. The interaction term was entered into each regression model at the last step (Baron & Kenny, 1986).

Interactions ($p < .10$) were further characterized to determine the nature of the effect. The continuous moderator variable, communication congruence, was standardized and centered for

improved interpretability of main effects (Cohen et al., 2003). The commonly recommended approach of simple slopes was used to further probe the interactions. This technique includes choosing conditional values of the moderator variable (communication congruence) to examine the significance of the simple slope for the regression of sex communication on the adolescent sexual risk behaviors of interest (Aiken & West, 1991). Per the same recommended approach for continuous variables, values for high (-1 SD) and low (+1 SD) communication congruence within the entire sample were calculated from the standardized values. These values were then entered into regression models in which simple slopes for the association between communication and adolescent sexual risk could be compared between dyads high and low in communication congruence. The regression models were examined and plotted to schematically illustrate the moderating role of communication congruence.

Results

Sexual Behavior Characteristics of Adolescent Participants

Just under half of the sample of adolescents (42%) reported having engaged in vaginal sex in their lifetime. On average, sexually active adolescents reported 2.8 occasions of unprotected sex in the past three months ($SD= 7.9$). Additionally, among sexually active adolescents responding to a 6-point Likert item assessing how often they use a condom from start to finish when they have sex, the mean response was “most of the time” ($M_{\text{relative frequency condom use}}= 4.4, SD= 1.9$). The modal response was 6 (“every time”) with just over half of respondents indicating this (51%). Further, when asked about intimate behaviors that precede intercourse (e.g., deep kissing, touching private parts), the largest proportions of adolescents reported having engaged in all of the intimate behaviors (36%) or none of the behaviors (23%).

Parent- and Adolescent-reported Sex Communication

Composite communication scores were created for parents and adolescents separately, summing their responses to nine parallel items assessing how often they talk to their parent/ child about various sexual health behavior topics (see Measures). As the nine items were measured on a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*all the time*), the composite scores for sexual communication ranged from nine to 36. On average, parents reported a high frequency of speaking with their child about sexual health and behaviors ($M_{\text{parent sex communication}} = 28.7$, $SD = 7.8$). In fact, the modal score for parent reports of sexual health communication with their child was 36, the highest possible score on the scale. In contrast, adolescents reported lower frequency of speaking with their parents about sexual health and behaviors ($M_{\text{adolescent sex communication}} = 18.7$, $SD = 8.0$). Further, the modal score for adolescent reports of sexual health communication with their parents was nine, the lowest possible score on the scale.

A paired-samples *t*-test was conducted to elucidate group differences between parent and adolescent reports of discussions of sexual health. As was seen descriptively, parents reported significantly higher rates of such communication ($t(297) = 19.5$, $p < .001$).

Congruence of Parent- and Adolescent-reported Sex Communication

A communication congruence score was calculated by taking the absolute value of the difference between the parent sex communication composite and the adolescent sex communication composite. Higher scores on this scale indicated low congruence and lower scores indicated high report congruence between parents and their adolescents. Communication report congruence ranged from zero to 27, with a mean of 11.1 ($SD = 7.2$), median of 11, and mode of 13. Overall, congruence of communication reports between parents and adolescents was moderate ($r = .38$, $p < .001$).

Independent Effects of Parent-reported Sex Communication on Adolescent Sexual Risk Behavior

The first set of primary analyses was conducted to test the independent effects of parent-reported sexual communication on the adolescent sexual risk behavior indices. First, the effect of parent-reported sex communication on non-coital intimate behaviors was examined using multiple linear regression. With adolescent age controlled for ($B = .49, p < .001$), parent-reported communication was not associated with adolescent engagement in non-coital intimate behaviors ($B = .02, ns$). Likewise, a binary logistic regression model with age controlled for ($B = .71, p < .001$) demonstrated that parent-reported sex communication was not associated with adolescent sexual activity status ($B = .03, \text{Exp}(B) = 1.03, 95\% \text{ CI} = [.99-1.07], ns$). Therefore, per parent-report, discussions of sexual health had no impact on adolescent behaviors such as making out or touching private parts or adolescents having had sexual intercourse at the time of study participation.

Similarly, parent-reported sex communication was not associated with adolescent-reported count data on number of unprotected sex occasions in the past three months ($B = -.14, ns$) in a negative binomial regression model that controlled for total number of occasions of sex. Thus, frequency of sexual health communication, as reported by parents, was not associated with adolescent frequency of unprotected sex.

Finally, in examining the effect of parent-reported sex communication on relative frequency of condom use among sexually active adolescents, multiple linear regression was used, with gender included as a covariate ($B = -1.17, p = .002$). Parent-reported sex communication was found to approach significance at the 95% level of confidence ($B = .05, p = .06$), indicating that,

per parent-report, more communication was associated with more condom use among adolescents.

Independent Effects of Adolescent-reported Sex Communication on Adolescent Sexual Risk Behavior

Results from a multiple linear regression model controlling for age ($B = .48, p < .001$) revealed that adolescent-reported sex communication was significantly associated with adolescent engagement in non-coital intimate behaviors ($B = .03, p = .009$). More frequent communication, based on adolescent report, was associated with higher levels of engagement in non-penetrative sexual behaviors such as making out and touching private parts. Likewise, results from a binary logistic regression analysis, controlling for adolescent age ($B = .70, p < .001$), revealed that adolescent-reported sex communication was significantly associated with sexual activity status ($B = .04, \text{Exp}(B) = 1.04, \text{CI} = [1.01-1.08], p = .02$). That is, adolescents who reported more family-level sexual health communication were more likely to report a lifetime history of sexual intercourse.

Using a negative binomial regression model, adolescent-reported sex communication was not associated with the number of occasions of unprotected sex ($B = .004, ns$). Further, adolescent-report of sex communication was not associated with relative frequency of condom use ($B = .04, ns$). Therefore, per adolescent-report, family-level discussions of sexual health had no impact on frequency of unprotected sex or condom use among adolescent participants.

Combined Effects of Parent- and Adolescent-reported Sexual Communication on Adolescent Sexual Risk Behavior

Table 8 summarizes results of analyses conducted to characterize the combined influence of parent- and adolescent-reported sex communication on adolescent sexual behavior outcomes.

Findings indicated that including both parent- and adolescent-reported sex communication in predictive models did not enhance the variance accounted for per each sexual risk outcome.

The hierarchical regression analysis for non-coital intimate behaviors revealed that adding parent-reported sex communication to a model already including covariates and adolescent-report data did not enhance the model. The covariate of age was entered at step 1 ($F(1, 297) = 147.35, p < .001$). At step 2, the addition of adolescent-report data significantly increased the variance accounted for ($F_{\text{change}}(1, 295) = 6.84, p = .009$). However, upon adding parent-report data at step 3, no significant model change occurred ($F_{\text{change}}(1, 294) = .85, ns$). This finding corroborates the previous finding that adolescent-report of family-level sex communication is significantly and strongly associated with adolescent engagement in non-coital intimate behaviors (e.g., $B_{\text{adolescent-reported sex communication}} = .03, p < .01$). Similar findings emerged for the analysis focusing on adolescent sexual activity status. In a hierarchical logistic regression, the covariate of age was entered at step 1 ($\chi^2 = 87.4, p < .001$), adolescent-reported sex communication at step 2 ($\chi^2 = 5.2, p = .02$), and finally, parent-reported sex communication was added at step 3 ($\chi^2 = .47, ns$).

The last set of analyses examined whether the addition of parent report of sex communication improved the prediction of unprotected sex occasions and relative frequency of condom use. For the analysis of number of occasions of unprotected sex, step 1 of the negative binomial regression included the covariates of age and total number of sex occasions ($\chi^2 = 125.40, p < .001$). Adolescent-report data was added at step 2 ($\chi^2 = .01, ns$), and parent-report data at step 3 ($\chi^2 = 3.79, p = .05$). There was a marginally significant change in the model with the addition of parent-reported sex communication at the final step.

For the hierarchical linear regression model examining relative frequency of condom use, the covariate of gender was entered at step 1 ($F(1, 94)= 9.91, p= .002$) and adolescent-report data at step 2 ($F_{\text{change}}(1, 93)= 6.25, p= .003$). Parent-reported sex communication at the final step, was not found to significantly contribute to the model ($F_{\text{change}}(1, 92)= 2.13, p= .15$).

Overall, it was observed that among the outcomes of interest, including parent-report data in combination with adolescent-report data on family-level sex communication did not significantly enhance the association between sex communication and adolescent sexual risk behavior. As such, including parent-report of such communication did not improve the predictive ability or variance explained by the models above and beyond the model fit indicated by adolescent-reported sex communication alone.

Moderating Effect of Communication Congruence on Sex Communication and Adolescent Sexual Risk Behavior

The last set of analyses sought to test the hypothesis that communication report congruence would moderate the effect of communication frequency on adolescent sexual risk behavior. It was predicted that both adolescent and parent reports of sex communication would be most strongly associated with sexual behavior outcomes for youth who exhibited a high level of agreement with their parents regarding how much sexual health communication they engage in.

For the hierarchical linear regression examining non-coital intimate behaviors, the covariate of age was entered at step 1, followed by adolescent-reported sex communication and the communication report congruence score at step 2, and the adolescent-reported sex communication \times communication congruence interaction term was entered at the final step. A significant adolescent-reported sex communication \times communication congruence score

interaction emerged at step 3 ($\Delta R^2 = .01$, $F_{\text{change}}(1, 293) = 5.18$, $p = .02$). The interaction was characterized and is illustrated in Figure 1. Findings indicate that, contrary to study hypotheses, for parent-child dyads high in communication report congruence, there was a non-significant positive association between adolescent reports of sexual health communication and engagement in non-coital behaviors ($B = .14$, $p = .18$). Further, for dyads low in congruence, there was a significant positive association between adolescent-reported communication and engagement in non-coital behaviors ($B = .57$, $p = .001$). Therefore, more communication predicted greater engagement in behaviors such as making out for adolescents who were not in agreement with their parents regarding the frequency of having sexual health discussions.

A moderating effect of communication congruence was found for the outcome of relative frequency of condom use as well. In the hierarchical linear regression that focused on the association between adolescent-reported sex communication and relative frequency of condom use, the covariate of gender was entered at step 1, followed by adolescent-reported sex communication and the communication report congruence score at step 2. The adolescent-reported sex communication \times communication congruence interaction term was entered at the final step. The interaction term was marginally significant ($\Delta R^2 = .03$, $F_{\text{change}}(1, 91) = 3.33$, $p = .07$). The interaction was probed to clarify the nature of the trend. For both high and low communication congruence groups, adolescent-reported communication did not significantly predict relative frequency of condom use. However, among families exhibiting high levels of agreement in reports of sexual health communication, there was a non-significant positive association between communication and frequency of condom use ($B = .45$, $p = .11$), indicating more talk predicted more condom use among those adolescents. For parent-child dyads demonstrating highly discrepant reports of sexual health communication, adolescent report of

communication was not associated with condom use frequency ($B = -.33, ns$). Figure 2 illustrates the nature of the interaction.

As a follow up to the above findings, count data variables were utilized to replicate the pattern evidenced by adolescent report of relative frequency of condom use as reported on the ordinal Likert scale. The count measure of number of unprotected sex occasions was used to compute a relative frequency variable by dividing the count variable of number of unprotected sex occasions by total number of sex occasions

$\left(\frac{\# \text{ unprotected sex occasions}}{\# \text{ unprotected sex occasions} + \# \text{ protected sex occasions}}\right)$. Hierarchical linear regression was then used to account for the non-integer values and included the predictors of gender, adolescent-reported sex communication, communication congruence score, and the interaction term previously defined.

The findings corroborated those of the Likert scale variable for relative frequency of condom use. A marginally significant interaction (adolescent-reported communication \times communication congruence) emerged for the model examining the outcome of the computed count variable for relative frequency of unprotected sex ($\Delta R^2 = .03, F_{\text{change}}(1, 91) = 2.84, p = .09$). The interaction was characterized and is illustrated in Figure 3. For the dyads low in communication congruence, there was no significant association between communication and relative frequency of unprotected sex occasions ($B = .02, ns$). However, among the dyads high in communication congruence, adolescent-reported sex communication was significantly negatively associated with relative frequency of unprotected sex ($B = -.13, p = .02$). Hence, for adolescents who agreed with their parents about how much they talk about sexual health, such communication was associated with decreased rates of unprotected sex, proportionate to the frequency of sex encounters (i.e. opportunities to choose to use a condom).

Communication congruence was not found to moderate the association between adolescent-reported sex communication and the remaining outcomes of interest, sexual activity status and number of unprotected sex occasions. Additionally, level of communication congruence (high vs. low) demonstrated no effect on the relationship between parent-reported sex communication and any of the four adolescent sexual risk behavior outcomes of interest.

Exploratory Analyses: Adolescent-perceived Parental Monitoring and Communication Congruence

No specific demographic differences emerged between families high and low in communication congruence. As such, follow up exploratory analyses were conducted to investigate any differences that might exist on a construct presumably related to parent-child relationship quality, adolescent-perceived parental monitoring. Within the present study, three items rated on a 4-point Likert scale (1 =they don't try to know at all, 4= they try to know all the time) asked adolescent participants about their perception of their parents' level of supervision (e.g., how much do your parents try to know about where you go at night?; See Appendix D). The responses to the three items were summed to create a composite score ($\alpha = .84$), which ranged from four to 12 ($M_{\text{parental supervision}} = 9.8, SD = 2.5$). Independent t -tests revealed that adolescents in high communication congruence families reported experiencing significantly higher levels of parental monitoring ($M = 10.2, SD = 2.3$) compared to adolescents in the low communication congruence group ($M = 9.3, SD = 2.6$); $t(296) = 3.34, p = .001$). Additionally, communication report congruence was negatively correlated with perceived parental supervision within the present sample ($r = -.17, p = .003$), indicating that greater communication congruence (indicated by low scores) was associated with more perceived monitoring.

Discussion

The major aims of the current study were to describe the congruence of reports of sexual health communication between African American adolescents and their parents, elucidate the relationship between such reports and adolescent sexual risk behavior, and to clarify whether congruence between parent and child reports influences the relationship of communication to adolescent sexual risk behavior. Whereas past research on the topic has focused on either parent or child description of sexual health communication, the present study is among the first to report on dyadic data, which provides clarification on the importance of data source when investigating the impact of family-level sexual health communication on African American adolescent sexual risk behavior. In the current sample, the parental subset was predominantly comprised of mothers (90%). As such, while our findings refer to “parental” influences, results primarily reflect data concerning maternal communication within African American families. In what follows, findings are described and elucidated, and implications for future research and intervention programming discussed.

Congruence of Parent and Child Reports of Sexual Health Communication

When asked identical questions about frequency of sexual health communication, parent and child self-reports were only moderately correlated, confirming that children’s recollections of past discussions do not correspond well to what is reported by parents. Overall, within subject comparisons indicated that parents reported significantly more family-level sexual health communication than did their adolescent children, a finding that is consistent with several other reports in the literature (DiIorio et al., 2003; Hadley et al., 2009; Kapungu et al., 2010; Miller, Kotchick, Dorsey, Forehand, & Ham, 1998; Miller et al., 2011; Newcomer & Udry, 1985).

Notably, nearly 30% of parents endorsed the highest possible frequency of sexual health communication with their children. A possible explanation for this descriptive finding is that a subset of parents inflates their report of sexual health communication. Past research confirms that parents endorse higher scores than their children on parallel measures of health (Upton, Lawford, & Eiser, 2008), psychopathology (Smith, 2007), as well as sexual health communication (Guilamo-Ramos, Jaccard, Dittus, & Collins, 2008; Jaccard et al., 2002; Lefkowitz, 2002). Response bias, specifically social desirability bias, has been implicated in this trend. Social desirability bias, much like “faking good” on personality measures, occurs when study participants provide responses to questions based on their perception of what is socially acceptable and will present them in the best possible light (Crowne & Marlowe, 1960; Fisher, 1993). It is perhaps not surprising that some parents perceive a need to present themselves as caring and responsible when asked about how they guide their children to make safer health behavior decisions.

Another possible explanation is that parents *perceive* their efforts to communicate sexual health information as frequent. Information processing theories indicate that the unique motives and expectations of different members in a conversation significantly affect how the communication is processed, and the information stored and retrieved (Wyer, 2004). Not only may it be the case that parents and their adolescents absorb and process sexual health-related messages differently, but their memories of the content and frequency of such conversations are likely to be different (Dahl & Harriri, 2004; Weinberger, Elvevag & Giedd, 2005).

A final explanation for the current findings is that African American parents are conveying sexual health information at relatively high rates. Despite this, it is possible that children may not always process or “hear” what their parents are attempting to convey to them.

Further, without objective data on sexual health communication, it is not possible to conclusively assess the quality of the communication or the extent to which adolescents are under-reporting or “tuning out” such conversations. In the absence of objective data, studies such as the present investigation are optimized by collecting data from both parents and children. The present study shines supporting light on the hypothesis that African American parents and their children may not be on the same page regarding discussions of sexual health.

The Role of Data Source in Elucidating the Impact of Family-level Sexual Health Communication on African American Adolescent Sexual Risk Behavior

The current findings corroborated past research and confirmed study hypotheses in that adolescent reports of family-level sexual health communication emerged as predictive of adolescent sexual risk behavior, whereas parent reports of communication did not. Additionally, analyses including both parent- and adolescent-reported data confirmed that the use of parent-report does not improve the predictive ability of models investigating communication and adolescent sexual risk outcomes over the inclusion of adolescent-report alone. Further, the present study contributes to the substantial subset of null findings derived from parent reports of family-level sexual health discussions, as illustrated in Table 1.

It is of note that, while analyses supported study predictions by finding a significant association between adolescent-reports of sex communication and sexual risk behaviors, these findings were in the opposite direction than predicted. Based on extant research, we anticipated that the more frequently sexual health discussions took place among African American families, the less likely adolescents would be to engage in sexual risk behaviors. However, in the present study, more family-level sex communication was associated with the adolescents being more likely to have initiated sex and engaging in a wider range of non-penetrative intimate behaviors.

However, it could be argued that these findings point to youth behaviors that are not necessarily indicative of psychologically risky decision-making.

In the present sample, having had sex prior to study participation was highly correlated with age. Indeed, nearly half of sexually active participants were 16 or 17 years old (49%), the maximum age for study eligibility. It is probable that this older, sexually active cohort was more aware and accepting of having discussions about sex with their parents as they likely have had more experience participating in such discussions, as compared to their younger counterparts.

Likewise, the significant findings linking family-level communication to adolescent engagement in non-coital intimate behaviors such as making out and touching private parts, may not necessarily speak to risky adolescent decision-making. Since analyses that focused on non-coital intimate behaviors included all adolescent participants, ranging from 11 to 17 years old, engagement in such behaviors likely represents different behavioral intentions for different age cohorts. Indeed, the highest proportion of adolescents endorsing all four intimate behaviors were ages 15 or older and when age cohorts were treated separately (i.e., 11-13 and 15-17), the association between family-level sex talk and intimate behaviors was only significant for the older adolescents. Like for sexual activity status, the finding that family-level sex communication is associated with greater engagement in non-coital intimate behaviors may be best explained by developmental factors such as maturity, cognitive capacity, and experience discussing sexual health issues with parents.

The Moderating Effect of Communication Congruence on the Association Between Sex Communication and Adolescent Sexual Risk Behavior

The final study hypothesis, that communication report congruence would moderate the relationship between family-level sexual health communication and adolescent sexual risk, was

partially supported. It was observed that greater family-level communication predicted greater condom use among sexually active adolescents, though only among parent-adolescent dyads high in agreement on how much sex communication they engaged in. The positive association found between communication and condom use supports the body of research upon which a majority of prevention and intervention efforts have been based (Sutton et al., 2014; Wight & Fullerton, 2012). However, this relationship has never been viewed in light of communication report congruence. As such, it is likely that there is a qualitative component to the parent-adolescent relationship that influences the degree to which sexual health communication is effective in decreasing adolescent risk behaviors, or as in the present finding, enhancing safe sexual practices. It appears that the construct of communication report congruence taps into this qualitative component and can help clarify and uncover the reason this body of work has remained mixed.

However, the pattern of findings diverged from the above for analyses focusing on non-coital intimate behaviors. For analyses that included the complete sample, both adolescents who had engaged in sexual intercourse and those who had not yet, findings indicated that more family-level sex talk was significantly associated with engaging in a wider range of non-coital intimate behaviors (e.g., making out), but only among low congruence families (i.e., those in which the parent and adolescent disagreed on the amount of communication taking place). This finding was unexpected and warrants careful consideration. It is conceivable that low communication report congruence may be associated with home environments in which adolescents experience independence and freedom in extracurricular and social functioning. Specifically, there may be family-level characteristics (e.g., parenting-style, household structure, cultural or religious values and practices) that account for parents and adolescents not being on

the same page regarding discussions of sexual health as well as adolescents having ample opportunity to engage in unsupervised sexual situations.

The Concept of Parent-Child Relationship Quality as Related to Communication

Congruence

Findings concerning the role of communication report congruence between African American parents and their children as connected to adolescent sexual health are important for several reasons. Many prevention and intervention programs target parental sexual health communication skills and adolescent knowledge of sexual risk correlates. The present study points to a related, yet unique aspect of such interventions in that conveying information may not be enough to buffer risk behavior among urban African American youth. It is likely that characteristics of such communication like the manner in which the information is conveyed or the relational context within which it occurs affects the degree to which family-level sexual health communication is effective in reducing adolescent sexual risk behavior.

Indeed, the current study found higher communication congruence to be associated with greater perceived parental supervision. This indicates that African American adolescents who perceive their parents to be interested and invested in their lives may experience protective benefits with respect to engaging in risk behaviors.

A modest body of research has found support for this hypothesis. Perkins and colleagues (1998) found that adolescents who perceived lower levels of family support were more sexually experienced than their counterparts. Further, Lehrer and colleagues (2006) suggested that adolescents who sense that they have limited parental support and investment may seek out sexual relationships in search of some form of interpersonal intimacy. Early sexual debut, which has been linked to future increased sexual risk behavior, has been found to be predicted by

perceived family conflict and poor relationships with either parent (McBride et al., 2003; Price & Hyde, 2009; Rose et al., 2005). Further, parental monitoring and support is decreased in single-parent households. Research has found that youth sexual involvement and risk-taking occurs at increased rates for adolescents who do not have a father in the home or have minimal paternal involvement (DePriore & Hill, 2013; Ellis et al., 2003; Newcomer & Udry, 1987). In the current sample, only 19% of adolescents reported having a father in the home. The present findings, supported by previous research, suggest that a lack of paternal involvement and single-parent family structures may contribute to family-level characteristics that place adolescents at risk for early sexual debut and increased risk taking.

Findings from limited research, in combination with the present findings, point to an important factor in adolescent sexual health behavior. While parent-child relationship quality is clearly important in a myriad of adolescent behavioral decisions, the unique contribution of this construct to decreasing African American youth sexual risk has been overlooked in the literature. Considering the significant investment in studying the impact of parent-level sexual health communication within this population, greater attention should be paid to the relational context within which the communication is occurring.

The concept of parent-child relationship quality specific to urban, African American families. Research indicates that African American families living in low-income communities face unique challenges to effective communication. For example, Gutman and colleagues (2005) demonstrated that the stress experienced by urban, low-income African American parents impairs their ability to provide effective parenting resources. The researchers sampled predominantly African American families living in inner-city neighborhoods in effort to investigate an economic stress model linking economic resources to adolescent behavioral

outcomes. Parent psychological distress increased the likelihood of negative parent-adolescent interactions (e.g., conflict, arguing) and decreased the likelihood of positive interactions (e.g., shared enjoyable activities).

In light of the unique psychosocial factors faced by urban, African American families, it stands to reason that studying the quality of the parent-child relationship and its correlates could highlight predictors of adolescent sexual risk behavior. The present findings are promising as they extend this line of research by identifying the role of communication report congruence in modifying adolescent risk behavior. The present sample reported a high rate of enrollment in free lunch programming and impoverished annual family income levels, indicating that our participants most likely face the same challenges and disadvantages documented within underserved communities (Brody et al., 2001). As such, these findings do not only characterize communication report congruence, but do so with an at-risk population that frequently contends with ecological stressors found to be associated with poorer parent-child relationship quality.

Limitations

Study findings should also be viewed in light of several study limitations. First, while the measure of family-level sex communication included a range of sexual health topics, the measure was limited in some aspects. Fundamentally, as a self-report measure it was not able to capture the attitude or motivation behind the conversations assessed. Study goals, analyses, and conclusions may have benefited from self-report data on parent- and adolescent-perceived tone, intention, and attitudes around family-level discussions of sexual health. Additionally, in the current study, a sample communication item as answered by youth participants was, “How often have you talked to your mom or dad about STDs?” One potential confound was wording the question with *you* as the subject. This may have been interpreted by the adolescent as implying

they needed to have initiated the conversation. A second potential semantic confound was inquiring about “mom or dad”. This may have prompted adolescents to respond based on conversations with a parent that was not participating in the study with them, which subsequently would have skewed the communication congruence score. A preferable approach may have been to word the items in the following manner: *How often have you and the parent who you are participating in today’s study with discussed the topic of STDs?*

Second, the study relied on self-report data for both the independent and dependent variables. Research conducted on self-report measures of adolescent health behaviors suggests that cognitive and situational factors inherent in self-reporting may pose threats to validity (Brener, Billy, & Grady, 2003). With respect to adolescent behavioral outcomes, the present study addressed such concerns methodologically by assessing recent behaviors to minimize memory deficits and by implementing private testing conditions to minimize perceived lack of confidentiality. Assessment of communication, however, can also be affected by such validity threats. Observational methods of family-level sexual health communication would potentially overcome some shortcomings posed by self-report. However, observational methods in this context would likely cause more substantial validity concerns including lack of confidentiality, influence of artificial environment, and actor biases. Subsequently, collecting more information on a wider range of communication characteristics would provide an optimized opportunity for understanding a construct as multifaceted as parent-adolescent communication and denotes an important direction for future research.

Recommendations for Future Research

The current study contributes to a considerable literature that has remained mixed for decades. While the findings described above provide some clarification on the role of data source

in understanding the association between family-level sex communication and African American adolescent sexual risk behavior, the findings also give rise to a number of related research questions. In what follows, recommendations for future research are discussed, organized by study aims and consequent findings.

Elucidating factors that account for parent-child sex communication report discrepancy. Despite the large body of research that has investigated the protective impact of parent-child communication on adolescent sexual risk behavior, to date, there has been minimal consideration of the alarming issue that parents and adolescents report different amounts of such communication. The present findings highlight this discrepancy and call for research efforts to clarify factors that may account for why parents and their children do not agree on how much they discuss sexual health.

High rates of parent-child informant discrepancy have been identified in areas outside of adolescent sexual health research (Achenbach, McConaughy, & Howell, 1987; Barnes & Olson, 1985; Tein, Roosa, & Michaels, 1994), indicating that this trend is not specific to discussions of sexual health. However, researchers in other areas have prioritized investigating factors that may account for high levels of disagreement (e.g., De Los Reyes & Kazdin, 2005) and factors such as attachment security (Berger et al., 2005), the setting in which data is collected (De Los Reyes, Henry, Tolan, & Wakschlag, 2009), and parental psychological functioning (Treutler & Epkins, 2003) have emerged as contributing to report discrepancy.

As most prevention and intervention programming seeks to increase rates of family-level sexual health communication, it is imperative that researchers move toward understanding what mechanisms account for such a discrepancy. In particular, urban African American families face a multitude of ecological factors that may affect how parents and their adolescent children

perceive conversations of sexual health. A necessary next step is to identify and test potential correlates of incongruence such as: socioeconomic considerations (e.g., household income, parent work schedule), individual demographic factors (e.g., parent and adolescent's age, gender), and individual psychological factors (e.g., parent's attitudes and beliefs around sexual behavior, parent psychopathology, adolescent intelligence, adolescent psychopathology).

Optimizing research designs and analytic approaches through use of adolescent reports of family-level sexual health communication. Findings from analyses that focused on the role of data source in understanding African American adolescent sexual risk behavior yielded similar results to those seen in the extant literature, in that adolescent report of sex communication more reliably predicted sexual behavior outcomes. As such, it is recommended that future research in this area focuses on and utilizes adolescent reports of family-level communication. Recruiting and collecting adolescent data for both family-level variables as well as behavioral outcomes of sexual risk promises a more efficient and effective methodological approach for this area of study.

Clarifying findings that associate greater family-level sexual health communication with greater adolescent sexual behavior. The present study found that, per adolescent report, more family-level sex talk predicted engagement in a wider range of non-coital behaviors and adolescents being sexually active at the time of study participation. These findings are similar to what has been observed throughout the literature. As such, an important next step is to understand what might account for the unexpected direction of this relationship.

A proposed hypothesis that has been previously cited in the literature regards the manner in which sexual health information is conveyed to adolescents by their parents. Previous research has suggested that authoritarian parenting styles and negativistic or punitive messages may

account for increased sexual risk among adolescents (Aronowitz & Eche, 2013; Ceballo & McLoyd, 2002; Ward & Wyatt, 1994). Further, African American parents are often conceptualized in the literature as focusing on abstinence and sex-negative messages (e.g., Kapungu et al., 2010). The current findings, in addition to those briefly described, call for research designs that more comprehensively assess the manner and context in which sexual health discussions are occurring between African American parents and their children. Characteristics including perceived tone, subjective attitudes and beliefs around sexual health, and parental intentions of initiating such conversations should be assessed in future endeavors that seek to clarify the inconsistent association between communication and adolescent sexual behaviors. Additionally, longitudinal designs would provide data for investigating developmental factors that may moderate or even mediate the relationship between family-level communication and adolescent sexual involvement. With such information, research can not only clarify the mixed literature but better inform family-level interventions that seek to reduce adolescent sexual health risk.

Investigating the construct of communication report congruence and African American familial relationship quality. Study findings highlight an important, yet puzzling effect of communication report congruence on the relationship between sexual health communication and African American adolescent sexual risk behavior. For example, low congruence enhanced the positive association between family-level sex talk and adolescent engagement in non-coital intimate behaviors, whereas high congruence enhanced the positive association between sex talk and adolescent condom use. In light of these findings, a recommended next step involves investigating correlates of communication report congruence. Such efforts would clarify family-level characteristics that contribute to a parent and adolescent's

level of agreement, and further, how that level of agreement influences adolescent sexual risk. Cross-sectional studies should seek to assess communication congruence while also collecting data on contextual family-level variables such as parent- and adolescent-perceived relationship quality, satisfaction, and support. Through recognizing family-level factors that are related to communication congruence, future experimental studies can implement interventions that maximize the protective benefit of parental involvement in adolescent sexual health decision making.

Future prevention and intervention programming. Finally, a critical future step informed by the present study is to apply the construct of communication congruence to prevention and intervention programming. Historically, intervention programs have been large, resource-heavy endeavors. A recent critical review of such programs (Bonafide & Vanable, 2015) found that family-level intervention programs targeting African American families in the United States are predominantly multi-session, require attendance by both parents and youth, and involve a number of staff that lead activities focused on psychoeducation, group discussion, and parental skill building. The review also noted that barriers for African American families participating in such intervention programming include the time investment and specific challenges for single-mother families.

In light of the present findings, intervention programming may benefit from shorter term models that emphasize structured, shared family time and familial relationship quality. While the aspects of parent-child relationship quality associated with adolescent sexual risk behavior are not yet fully understood, past and current evidence suggests that enhancing quality time for families may provide protective sexual health benefits for adolescents. Future family-level prevention and intervention programs should endeavor to include content and activities focused

on enhancing familial relationship quality in addition to promoting safe sexual health information. As mentioned, these programs could potentially be shorter term, more cost-effective, and presumably feasible for African American family participation. Perhaps most importantly, based on the current findings, incorporating such emphases into intervention program efforts may provide potent ingredients for reducing adolescent sexual risk behavior.

Conclusions

The findings of the present study are useful in the context of study strengths including: the use of parent-adolescent dyadic data, recruitment of an urban, underserved African American population, and analytic strategies testing a novel moderation hypothesis. The current study contributes a potential explanation for a mixed literature and points to a contextual and relational component of family-level sex communication that has been overlooked. Future endeavors should a) rely on adolescent reports of sexual health communication when deciding upon data source in research designs, b) attempt to understand factors that may account for low rates of communication report congruence among African American parents and adolescents, and c) extend the present findings to clarify the effect of family-level characteristics associated with parent-child communication on adolescent sexual risk. Intervention efforts can feasibly and cost-effectively test contextual constructs like time spent together and adolescent-perceived parental investment and caring. The construct of communication congruence represents a first step in informing more effective and efficient interventions for a high-risk population and decreasing disproportionate rates of sexually transmitted infections within the African American community.

Table 1

Review of Empirical Studies of Parent-Adolescent Sex Communication and Adolescent Sexual Risk Conducted since 2000, Data Source, Assessment of Communication, Outcome Measures, & Results

Study Authors	Data Source (A/P/PA)	Measures of Parent-Adolescent Sex Communication	Adolescent Sexual Risk Outcomes	Results
Bettinger et al., 2004	A	OFCS	Gonorrhea and chlamydia incident infection	NULL
Bersamin, Walker, Fisher, & Grube, 2006	A	Dichotomous (Y/N) to ever talked with parent about 7 sexual topics	Had sexual intercourse (Y/N) Had oral sex (Y/N)	NEG
Buzi, Smith, & Weinman, 2009	A	Frequency of discussions (having sex, birth control, risks of STDs, delaying pregnancy)	Sexual risk behaviors (age of first sex, condom use, number of lifetime sex partners, STD infection/treatment)	POS
DiClemente et al., 2001	A	Frequency of discussions (pregnancy, STD/HIV prevention, condom use)	Recent condom use (past 30 days and last intercourse); contraception use (past 6 mos, last 5 sex encounters)	POS
DiIorio, McCarty, Dezmore, & Landis, 2006	A	Dichotomous (Y/N) to ever talked with mother about 12 sexual topics	Had sexual intercourse (Y/N) Intimate sex behaviors	NULL
Fasula & Miller, 2006	A	Agreement to mother's responsiveness to 8 sexual topics	Anticipate having sex in the next year? (Y/N)	POS
Hacker, Amare, Strunk, & Horst, 2000	A	Frequency of parental communication	Had sexual intercourse (Y/N) Frequency of contraceptive use	POS
Huebner & Howell, 2003	A	Frequency of discussions (sex and birth control)	Sexual risk behaviors (multiple sex partners and condom use at last sex)	NULL
Hutchinson, Jemmott, Jemmott, Braverman, & Fong, 2003	A	Dichotomous (Y/N) to ever talked with mother about 5 sexual topics	Sexual risk behaviors (multiple sex partners, number of episodes of intercourse, number of days of unprotected intercourse, past 3 months)	POS
Jordahl & Lohman, 2009	A	IPPA	Had sexual intercourse (Y/N)	NULL
Karofsky, Zeng, & Kosorok, 2000	A	Quality of communication on varying topics including sexual issues	Had sexual intercourse (Y/N)	POS
Mueller et al., 2010	A	Family Communication asset (factor)	Had sexual intercourse (Y/N) Use of birth control at last sex (Y/N)	POS
Santelli et al., 2004	A	Frequency of discussions (abstinence,	Had sexual intercourse (Y/N)	NULL

Sneed, 2008	A	condoms, HIV/STD prevention, pregnancy) Quality of communication on 5 sexual topics	Dichotomous (Y/N) to range of sexual behaviors (kissing to vaginal/ anal sex)	NULL
Sneed, Strachman, Nguyen, & Morisky, 2009	A	OFCS	Dichotomous (Y/N) to range of sexual behaviors (kissing to vaginal/ anal sex)	NULL
Somers & Ali, 2011	A	Frequency of discussions on 20 sexual topics (e.g. abstinence)	Frequency of: sexual behaviors (kissing, petting, oral and vaginal sex), unprotected intercourse	NULL
Stanton et al., 2002	A	OFCS & PFCS	Had sexual intercourse (Y/N) Used condom at last sex	POS
Teitelman, Ratcliffe, & Cederbaum, 2008	A	Frequency of sexual risk communication (7 sexual topics) and sexual pressure communication (4 sexual pressure topics)	Dichotomous (Y/N) to have never had sex, have always used condoms during sex, and used condom at last sex	POS
Vesely et al., 2004	A	Family Communication asset (factor)	Had sexual intercourse (Y/N) Sexual risk behaviors (current sexual activity, number of lifetime sex partners, use of birth control, age of first sex)	POS
Yang et al., 2007	A	OFCS & PFCS	Had sexual intercourse (Y/N)	POS
Young & Vazsonyi, 2011	A	Frequency of discussions on 5 sexual topics	Sexual risk behaviors (age of first sex, condom use, number of current sex partners, pregnancy, STD infection/ treatment)	NULL
<hr/>				
Davis & Friel, 2001	P	Frequency of sex-related discussions (Add Health Survey)	Age of first sex, number of sexual partners	NEG
Deptula, Henry, & Schoeny, 2010	P	Frequency of sex-related discussions (Add Health Survey) Quality of communication on sexual topics Frequency of communication on sexual costs	Sexual risk behaviors (sexual activity, unprotected intercourse, unintended pregnancy, STD infection)	NEG
Gillmore, Chen, Haas, Kopak, & Robillard, 2011	P	Frequency of sex-related discussions (Add Health Survey)	Condom use (relative frequency)	NULL
Henrich, Brookmeyer, Shrier, & Shahar, 2006	P	Frequency of sex-related discussions (Add Health Survey)	Sexual risk behaviors (never used a condom, drinking during first or last sex, drug use during first or last sex, ever has sex for drugs/ money, early	NULL

Khurana & Cooksey, 2012	P	Frequency of sex-related discussions (Add Health Survey)	sexual debut) Sexual risk behaviors (number of lifetime sex partners, relative frequency of condom use past year, STD infection past year)	NEG
Koo, Rose, Bhaskar & Walker, 2012	P	Frequency of sex related discussions, past 12 mos	Sexual activity status, anticipated sexual activity next 12 mos, other risk behavior involvement (e.g. drug use)	NULL
Lam, Russell, Tan & Leong, 2008	P	Frequency of sex-related discussions (Add Health Survey)	Have engaged in noncoital sexual activity (touched/had touched genitals) (Y/N)	NEG
McNeely et al., 2002	P	Frequency of sex-related discussions (Add Health Survey)	Timing of first sexual intercourse	NULL
Pearson, Muller, & Frisco, 2006	P	Frequency of sex-related discussions (Add Health Survey)	Had sexual intercourse (Y/N)	NEG
Rose et al., 2005	P	Frequency of sex related discussions, past 12 mos	Sexual activity status, anticipated sexual activity next 12 mos, other risk behavior (e.g. drug use)	NULL
Usher-Seriki, Bynum, & Callands, 2008	P	Frequency of sex-related discussions (Add Health Survey)	Had sexual intercourse (Y/N)	NEG
<hr/>				
Aspy et al., 2007	PA	Family Communication- General (5) Family Communication- Sexual behavior (5)	Had sexual intercourse (Y/N) Used birth control, with how many people have you had sex, how many times have you had sex	Mixed: POS (A) NEG (P)
Hadley et al., 2009	PA	Dichotomous (Y/N) to ever talked with mother about 6 sexual topics	Had sexual intercourse (Y/N) Sexual activity past 90 days, condom use past 90 days (relative frequency)	Mixed: POS (A) NULL (P)
Kapungu et al., 2010	PA	Dichotomous (Y/N) to ever talked with mother about 17 sexual topics	Sexual risk behavior (sexual debut, sexual activity status, number of sex partners, STD infection) Condom use (relative frequency)	Mixed: POS (A) NULL (P)

Note. A= adolescent-reported communication, P=parent-reported communication, PA= parent- and adolescent-reported communication; OFCS= Open Family Communication Scale (Barnes & Olsen, 1985); PFCS= Problem Family Communication Scale (Barnes & Olsen, 1985); IPPA= Inventory of Parent and Peer Attachment (Armsden & Greenberg, 1986)

Table 2

Demographic Characteristics of Parent Participants

Parent Characteristics (n= 298)	%	M	SD
Gender (Female)	90		
Age		40	7.2
Ethnicity			
African American	89		
White	4		
Multiracial	7		
Marital Status			
Single	54		
Married	21		
Sep/ Divorced/ Widowed	25		
Number of children in the home		3	1.7
Highest Level of Education			
Less than HS	24		
HS Diploma/ GED	35		
Some College	29		
College Degree	13		
Hours worked per week			
0 hours per week	42		
1-30 hours per week	58		
Household income < \$45k	94		
Child enrolled in free lunch program	87		

Table 3

Demographic Characteristics of Adolescent Participants

Adolescent Characteristics (n= 298)	%	M	SD
Gender (Female)	61		
Age		14	1.8
Sexually active	42		
Father in the home	19		
Number of siblings			
Brothers		2.4	2.1
Sisters		2.5	2.1
Religious Attendance			
Never	16		
Rarely	38		
At least once/ month	20		
At least once/ week	27		
Grades earned in school			
As	12		
Bs	43		
Cs	35		
Anticipated academic/ career path			
Grad HS	6		
College/ trade school	32		
Earn advanced degree	60		

Table 4

Descriptive Statistics for Communication Indices (Parent-reported, Adolescent-reported, and Congruence)

	Parent-Reported Sex Communication	Adolescent-Reported Sex Communication	Communication Congruence Score
Range	0-36	0-36	0-27
Mean	28.7	18.7	11.1
SD	7.8	8.0	7.2
Mode	36	9	13
Skewness	-.98	.52	.26

Table 5

Descriptive Statistics for Adolescent Sexual Risk Behavior Outcome Variables

Adolescent Characteristics	<i>n</i>	%	<i>M</i>	<i>SD</i>
Sexually Active	298	42		
Relative frequency condom use (1-6)	96		4.4	1.9
Number of unprotected sex occasions	125		3.6	6.7
Non-coital Intimate Bxs (0-4)	298		2.2	1.6
None of behaviors		23		
One of behaviors		16		
Two of behaviors		11		
Three of behaviors		14		
All behaviors		36		

Table 6

Regression Analyses for Parent-reported Sex Communication on Adolescent Sexual Risk Behaviors

Adolescent Sexual Risk Outcome	<i>n</i>	<i>B</i>	<i>SE</i>	<i>p</i>
Non-coital intimate behaviors	298	.02	.01	.11
Sexual activity status	298	.03	.02	.18
Number of unprotected sex occasions	125	-.14	.26	.60
Relative frequency of condom use	96	.05	.03	.06

Table 7

Regression Analyses for Adolescent-reported Sex Communication on Adolescent Sexual Risk Behaviors

Adolescent Sexual Risk Outcome	<i>n</i>	<i>B</i>	<i>SE</i>	<i>p</i>
Non-coital intimate behaviors	298	.03	.01	< .01
Sexual activity status	298	.04	.02	.02
Number of unprotected sex occasions	125	.004	.23	.99
Relative frequency of condom use	96	.04	.03	.29

Table 8

Model Fit Indices for Independent and Combined Effects of Adolescent-reported and Parent-reported Sex Communication on Sexual Risk Behavior Outcomes

		Non-coital Intimate Behaviors	Sexual Activity Status	Number of Unprotected Sex Occasions	Relative Frequency Condom Use
Step 1.					
Covariates	χ^2		87.4***	125.40***	
	df	1, 296	1	2	1, 94
	F	147.4***			9.91**
Step 2.					
Adolescent-reported Sex Communication (Only)	$\Delta \chi^2$		5.2*	.014	
	χ^2		92.6***	125.41***	
	df	2, 295	2	3	2, 93
	F	78.55***			6.25**
	$F \Delta$	6.84**			2.45
Step 3.					
Combined Parent- and Adolescent- reported Sex Communication	$\Delta \chi^2$.47	3.79	
	χ^2		93.1***	129.20***	
	df	3, 294	3	4	3, 92
	F	52.62***			4.93**
	$F \Delta$.85			2.13

* $p < .05$

** $p < .01$

*** $p < .001$

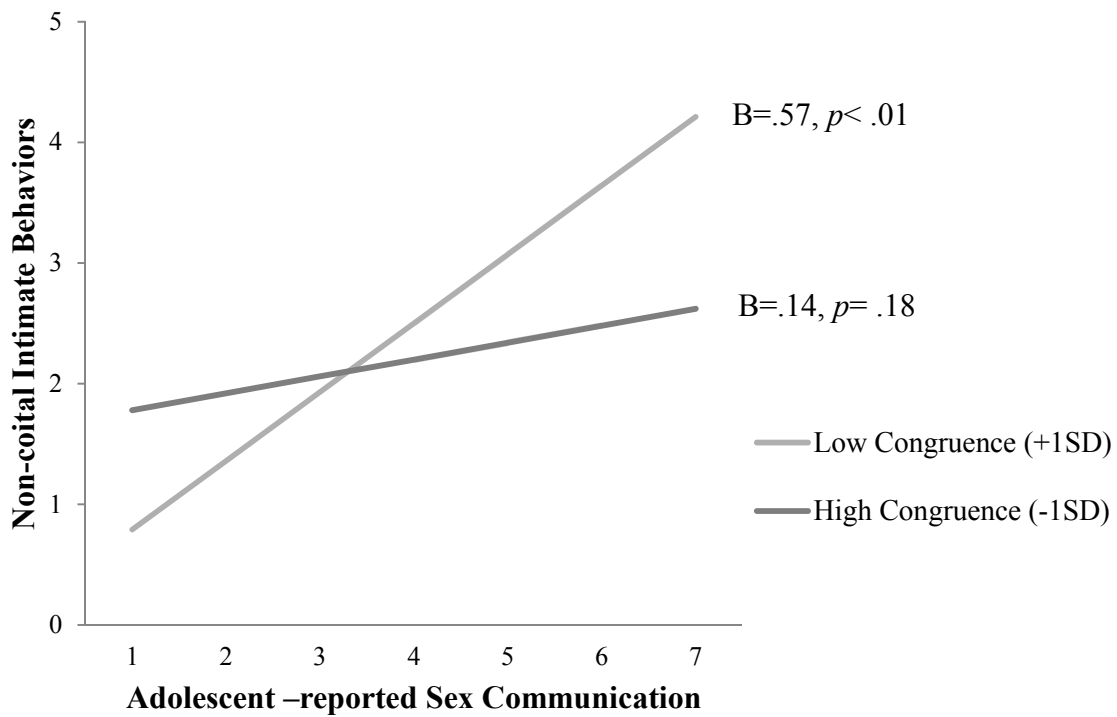


Figure 1. Adolescent-reported sex communication \times communication congruence on non-coital intimate behaviors

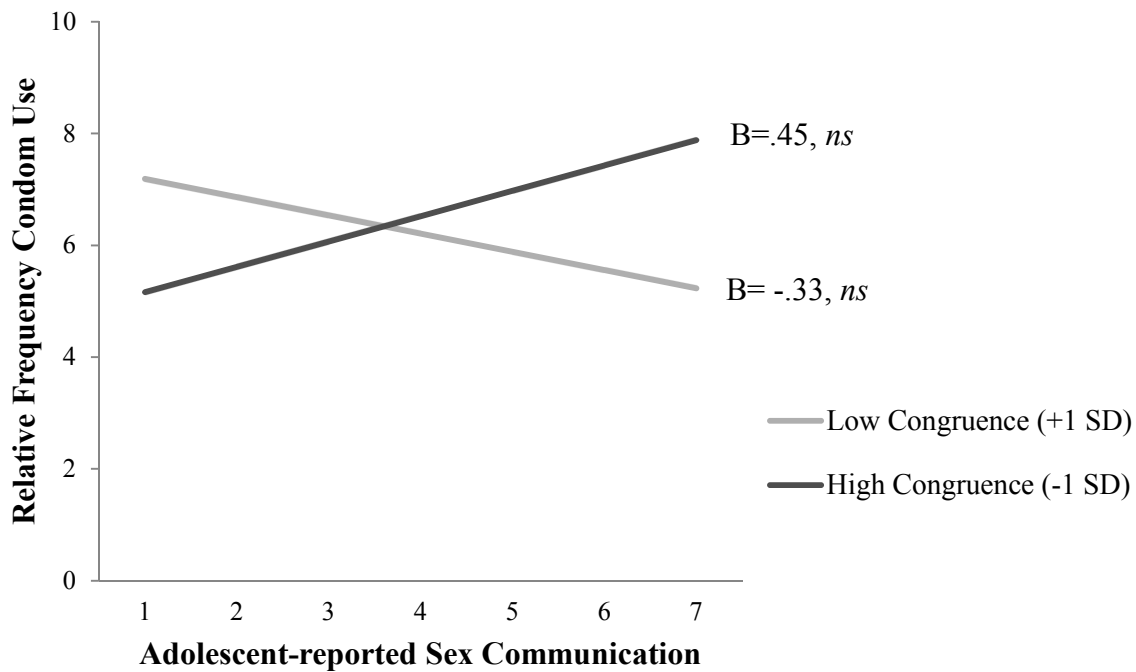


Figure 2. Adolescent-reported sex communication \times communication congruence on relative frequency condom use

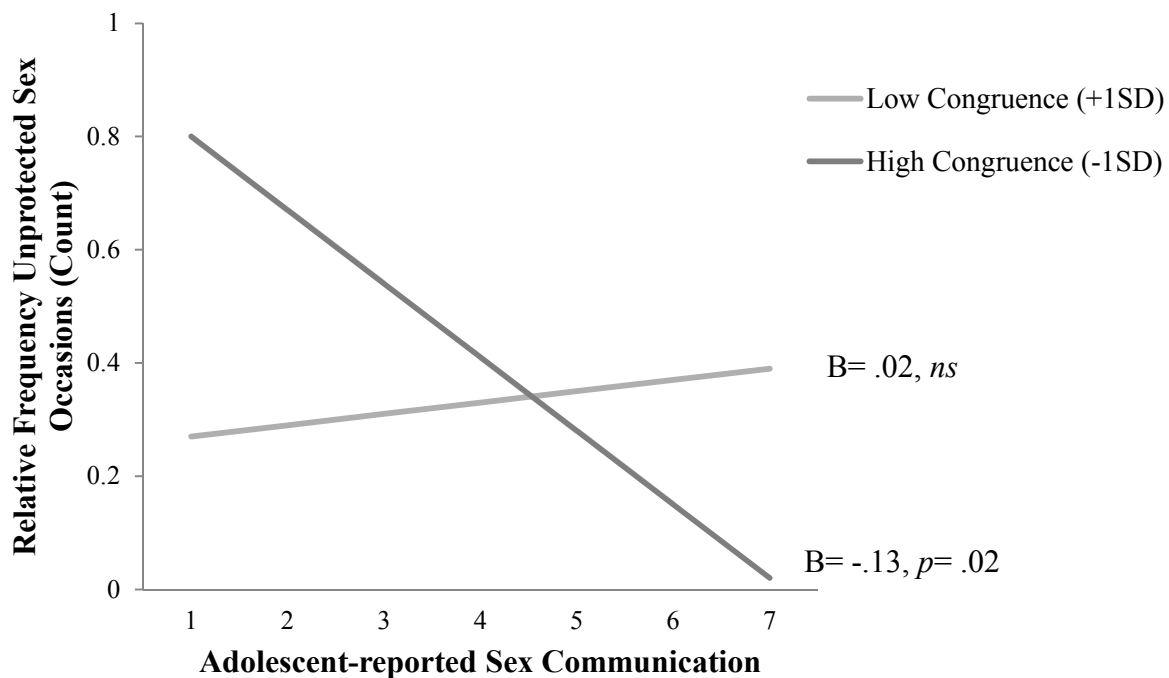


Figure 3. Adolescent-reported sex communication \times communication congruence on relative frequency of unprotected sex occasions using count data

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Appendix A

Demographic Information*Parent*

1. **How old are you?** _____ years
2. **Are you male or female?** 1. Male 2. Female
3. **Do you consider yourself to be Hispanic/Latina/Latino?** 1. Yes 2. No
4. **Which of the following best describes your racial/ethnic background?**
 1. African-American or Black
 2. White or Caucasian
 3. Asian or Pacific Islander
 4. American Indian or Alaska Native
 5. Mixed or Multiracial
 6. Other
5. **Do you consider yourself to be African-American?** 1. Yes 2. No
6. **What is the highest grade or year of school that you have completed?**
 - (1) less than High School
 - (2) graduated High School or obtained GED
 - (3) some college
 - (4) graduated college
7. **How many hours a week do you work for pay outside of the home?**
 - (1) 0 hours per week
 - (2) 1-5 hours per week
 - (3) 6-10 hours per week
 - (4) 11-20 hours per week
 - (5) 21-30 hours per week
 - (6) 31-40 hours per week
 - (7) more than 40 hours per week
8. **What is your annual family income?**
 - (1) less than \$15,000
 - (2) \$15,000 to \$30,000
 - (3) \$30,000 to \$45,000
 - (4) more than \$45,000

9. Which of the following best describes your marital status:

- (1) Married
- (2) Divorced
- (3) Separated
- (4) Single (never married)
- (5) Widowed

10. Do you live with your spouse or partner? 1. Yes 2. No

11. How many children do you have? _____ (max = 15)

12. How many children live in your home? _____ (max = 15)

13. What is your current zip code? _____

14. Who are you taking the survey with today? 1. My son 2. My daughter

15. What is your relation to the child who is completing this study with you?

- (1) Mom
- (2) Dad
- (3) Guardian (relative)
- (4) Guardian (non relative)

16. Is your child eligible for the free lunch program at school? 1. Yes 2. No

Adolescent

1. How old are you? _____ years old

2. Are you male or female? 1. Male 2. Female

3. Do you consider yourself to be Hispanic/Latina/Latino? 1. Yes 2. No

4. Which of the following best describes your racial/ethnic background?

- | | |
|------------------------------|-------------------------------------|
| 1. African-American or Black | 4. American Indian or Alaska Native |
| 2. White or Caucasian | 5. Mixed or Multiracial |
| 3. Asian or Pacific Islander | 6. Other |

5. Do you consider yourself to be African-American? 1. Yes 2. No

6. Who are the adults who live in your home?

- (1) Mother (birth or adoptive)
- (2) Father (birth or adoptive)
- (3) Stepfather
- (4) Stepmother
- (5) Other adults (not relatives)
- (6) Other relatives

7. How many brothers do you have? _____

8. How many sisters do you have? _____

9. How often do you attend religious services (for example, church, Sunday school, or bible school)?

- (1) Never
- (2) Rarely
- (3) At least once a month
- (4) At least once a week

10. Regarding your education, which of the following is most likely to happen?

- (1) To quit before I graduate high school
- (2) To graduate from high school then stop
- (3) To graduate from high school and then go to college or trade school
- (4) To graduate from high school and college, then obtain an advanced degree (e.g., medical or law school)

11. In what grade are you?

- 1. 4th grade
- 2. 5th grade
- 3. 6th grade
- 4. 7th grade
- 5. 8th grade
- 6. 9th grade
- 7. 10th grade
- 8. 11th grade
- 9. 12th grade
- 10. Ungraded or No grade
- 11. I'm not in school (If AA56=11 skip to BBInst1)

12. During the past 12 months, how would you describe your grades in school?

- 1. Mostly As (90 +)
- 2. Mostly Bs (80 – 89)
- 3. Mostly Cs (70 – 79)
- 4. Mostly Ds (60 – 69)
- 5. Mostly Fs (below 60)

13. Compared to other students in your class, what kind of student are you?

1. One of the best
2. Above the middle
3. In the middle
4. Below the middle
5. Near the bottom

Appendix B

Parent-Adolescent Sex Communication*Parent*

	Not at all	Rarely (1-2 times)	Some (3-4 times)	Quite a bit (5 or more times)
1. How often have you talked to your child about STDs?	1	2	3	4
2. How often have you talked to your child about AIDS?	1	2	3	4
3. How often have you talked to your child about using a condom?	1	2	3	4
4. How often have you talked to your child about dating?	1	2	3	4
5. How often have you talked to your child about teen pregnancy?	1	2	3	4
6. How often have you talked to your child about the dangers of having many sex partners?	1	2	3	4
7. How often have you talked to your child about what you think of teens having sex?	1	2	3	4
8. How often have you talked to your child about birth control?	1	2	3	4
9. How often have you talked to your child about the "facts of life" such as how pregnancy happens.	1	2	3	4

Adolescent

	Not at all	Rarely (1-2 times)	Some (3-4 times)	Quite a bit (5 or more times)
1. How often have you talked to your mom or dad about STDs?	1	2	3	4
2. How often have you talked to your mom or dad about HIV/AIDS?	1	2	3	4
3. How often have you talked to your mom or dad about using a condom?	1	2	3	4
4. How often have you talked to your mom or dad about dating?	1	2	3	4
5. How often have you talked to your mom or dad about teen pregnancy?	1	2	3	4
6. How often have you talked to your mom or dad about the dangers of having many sex partners?	1	2	3	4
7. How often have you talked to your mom or dad about how they feel about teens having sex?	1	2	3	4
8. How often have you talked to your mom or dad about birth control?	1	2	3	4
9. How often have you talked to your mom or dad about the “facts of life” such as how pregnancy happens.	1	2	3	4

Appendix C

Lifetime and Recent Sexual Behaviors

1. Have you ever had a boyfriend or girlfriend? This would be someone who is “more than just a friend...” a person that you have been romantically involved with?

1. Yes 2. No

2. Have you ever participated in deep kissing or “making out” (some people call this “French kissing”)?

1. Yes 2. No

3. Have you ever done really sexy dancing (some people call this “bump and grind” or “dirty dancing”)?

1. Yes 2. No

4. Has a partner ever touched your private parts?

1. Yes 2. No

5. Have you ever touched a boy or girl’s private parts?

1. Yes 2. No

6. Have you ever given or received oral sex? Oral sex is when a person puts his mouth on a partner’s penis or vagina.

1. Yes 2. No

7. When was the last time you gave or received oral sex?

- 1 Less than 3 months ago
- 2 Between 3 and 6 months ago
- 3 Between 6 and 9 months ago
- 4 Between 9 and 12 months ago
- 5 Over a year ago

8. With how many people have you given or received oral sex? _____

9. Have you ever had vaginal sex, when a boy puts his penis inside a girl’s vagina?

- 1 Yes (skip) 2 No

10. At what age do you plan to start having vaginal sex?

- 1 At 16 years old
- 2 At 17 years old
- 3 At 18 years old
- 4 Between the ages of 19 and 21
- 5 Older than 21 years old
- 6 Not until I am married

11. When was the last time you had vaginal sex?

- 1 Less than 3 months ago
- 2 Between 3 and 6 months ago
- 3 Between 6 and 9 months ago
- 4 Between 9 and 12 months ago
- 5 Over a year ago

12. Thinking of the last time you had vaginal sex, did you or your partner use a condom from start to finish?

1. Yes
2. No

13. With how many people have you had vaginal sex with in your lifetime? _____**14. Have you tried to become pregnant or to get someone pregnant in the past 12 months?**

1. Yes
2. No

15. How many times have you been or gotten someone pregnant? _____**Sexual Behavior, Last 3 months**

1. With how many people have you had vaginal sex in the past 3 months? Remember that vaginal sex is when a boy puts his penis inside a girl's vagina _____ People in the past 3 months

[if 0, skip to RSBB5]

2. In the past 3 months, how many total times have you had vaginal sex (penis in vagina) without using a condom? _____ times in the past 3 months

3. In the past 3 months, how many total times have you had vaginal sex (penis in vagina) where you or your partner used a condom? _____ times in the past 3 months

Condom use, last 3 months, relative frequency measure

	Never	Rarely	Some of the time	Most of the time	Nearly every time	Every time
4. In the last 3 months, how often would you say that you and your partner or partners used a condom from start to finish when you had vaginal or anal sex? Would you say that you used condoms never, rarely, some of the time, most of the time, nearly every time, or every time?	1	2	3	4	5	6

5. In the past 3 months, how many times have you given or received oral sex (penis in partner's mouth) without a condom? _____ times in the past 3 months

Appendix D

Parental Supervision and Approval
(Betinger et al., 2005)

	They don't try to know at all	They try to know some of the time	They try to know most of the time	They try to know all of the time
1. How much do your parents or guardians try to know about where you go at night?	1	2	3	4
2. How much do your parents or guardians try to know about what you do in your free time?	1	2	3	4
3. How much do your parents or guardians try to know about where you are most afternoons?	1	2	3	4

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Curriculum Vitae

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EDUCATION

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| Ph.D. | 2015 | <p>Syracuse University, Syracuse, New York
 Doctor of Philosophy in Clinical Psychology (APA Accredited)
 Dissertation Title: <i>Parent-Child Communication Among African American Families: Does “Being on the Same Page” Protect Against Adolescent Sexual Risk Behavior?</i>
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| M.S. | 2012 | <p>Syracuse University, Syracuse, New York
 Master of Science in Clinical Psychology
 Thesis Title: <i>Enhancing Male HPV Vaccine Acceptance: The Role of Altruism and Awareness of Male Specific Health Benefits</i>
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| M.A. | 2008 | <p>Boston College, Chestnut Hill, Massachusetts
 Master of Arts in Mental Health Counseling</p> |
| B.S. | 2006 | <p>Lehigh University, Bethlehem, Pennsylvania
 Bachelor of Science in Psychology,
 concentration in Social Psychology
 English Minor in Writing
 Senior Honors Thesis: <i>Achievement Goals in Physical Fitness and Exercise</i>
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