7-16-2009

Examining the Trajectory of Change in Sex Communications between African American Female Parents and their Children

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EXAMINING THE TRAJECTORY OF CHANGE IN SEX COMMUNICATIONS BETWEEN AFRICAN AMERICAN FEMALE PARENTS AND THEIR CHILDREN

by

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Under the Direction of Lisa Armistead, Ph.D.

ABSTRACT

Parent child communications about sex play an important role in influencing adolescent's sexual behaviors and attitudes. The present study was conducted to examine how sexual communications between African American mothers and their children change over a period of three years in the areas of sex education, communication about risk reduction, and child and parent report of responsiveness. Hierarchical linear modeling (HLM) analyses found significant linear or curvilinear trajectory in communication with sons and daughters in all areas. Gender differences were found such that daughters received more communication than sons. Furthermore, daugthers' sexual maturation was found to be associated with a decrease in the rate of decline of communication about general sex information. For sons, mothers decreased in rates of responsiveness as sons got older; however, as sons' sexual maturation increased, rates of declining responsiveness slowed down.

INDEX WORDS: Parent child communications about sex, African American families, Hierarchical linear modeling, Sexual maturation

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

in the College of Arts and Sciences

Georgia State University

2009

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August 2009

ACKNOWLEDGEMENTS

This thesis has taken the support, patience, and guidance of many people over the past two years. Specifically I would like to acknowledge the mentorship of Lisa Armistead and her unwavering support in allowing me to pursue questions that were of interest to me. Lisa served as a cheerleader when tasks seemed impossible and her edits were done with in a way that helped further my writing skills. The analyses involved were complicated and troublesome and would have been impossible if not for the patience and exceptional guidance from Chris Henrich and his indefatigable willingness to troubleshoot the various error messages I received from the HLM software. My family played an important role in fostering the sense of curiosity I have had as a child and instilling within me a desire to pursue a career, and thus a thesis, in which I work for underserved populations. And finally, all the loved ones in my life are recognized and appreciated for tolerating my absences at events and for encouraging me to "just get it over with".

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INTRODUCTION

The 2007 annual AIDS report by the Joint United Nations Programme on HIV/AIDS (UNAIDS) announced a 16 percent decrease, from 39.5 million to 33.2 million, in the estimate of people who are living with HIV around the world (UNAIDS/WHO, 2007). While the report appears to be an indication that efforts to alter the trend of the epidemic are substantial, the authors of the report caution that the drastic changes are largely explained by methodological revisions in estimation. In reality, the impact of HIV/AIDS continues to be devastating all over the world. For instance, North America has one of the world's largest number of people living with HIV, with estimates of 1.7 million people infected and 21,000 people dying annually from AIDS (UNAIDS/WHO, 2007). The latest estimates by the CDC suggest that risky sexual behaviors were most responsible for transmission of the virus in the United States, and 13.6 percent of new infections in 2005 were in youth between the ages of 15-24 (CDC, 2007).

Recent surveillance data of other sexually transmitted diseases illustrate the additional risks associated with sexually risky behavior. The 2006 National Surveillance Data reported that chlamydia is at the highest level ever in U.S, with over one million infections accompanied by increases in both gonorrhea and syphilis rates as well (CDC, 2007). A closer look at surveillance data reveals a disproportionate rate of STDs among ethnic minorities, with rates of infection among African Americans 8 times higher than whites for chlamydia, 18 times higher for gonorrhea, and 6 times higher for syphilis (CDC, 2006). When age is taken into consideration, estimates suggest that youth between the ages of 15 to 24 account for nearly half of the 19 million new STD infections each year (Weinstock, et al., 2004). In a 2006 report entitled *HIV/AIDS among Youth*, the CDC identified several interrelated issues that contribute to the disproportionate impact of STDs on African American youth, including health disparities that

exist based on economic class (e.g. access to health care), dropping out of school and lack of awareness about HIV infection and AIDS. In addition to impacting the rise of STDs, these interrelated issues may influence the extent to which parents and children communicate about sex.

With the ever-increasing consequences of sexually risky behavior, effective prevention strategies for ethnic minority youth in the United States are urgently needed. An understanding of the influences on risk behavior is essential for the creation of effective prevention. A review of the extant literature suggests that family plays a crucial role in shaping adolescents' sexual behaviors and attitudes (Moore, Peterson, & Furstenberg, 1986; Kotchick, Shaffer, Forehand, & Miller, 2001; Rose, et al., 2005). Consequently, much of the literature aimed at reducing adolescent sexual risk behavior focuses on family processes and, in particular, family communications about sex. Studies have shown that parent-child communication about sex is associated with less sexual risk behavior, including older age at sexual initiation (Aspy, et al, 2006; Lehr, et al. 2000), consistent use of birth control (Hutchinson, 2002; Miller et al., 1998), and fewer sexual partners (Clawson & Reese-Weber, 2003; Leland & Barth, 1993).

Studies examining the relationship between parent child communications about sex and adolescent sexual risk behavior have focused on the quality, content, and frequency of that communication. With respect to communication quality, researchers have examined both the parents' degree of comfort and confidence during communication and their openness or responsiveness to sex communication (Miller et al., 2007; Whitaker, Miller, May, & Levin, 1999**)**. Investigators have found that sex communication is a predictor of sexual risk reduction only if teens perceived their parents to be open, skilled, and comfortable in discussions (Whitaker, Miller, May & Levin, 1999; Fasula & Miller, 2006). Studies on the content of sex

communication include examination of general sexuality (e.g. menstruation and dating) and sex risk reduction (e.g. condoms and birth control) topics (DiIorio, Kelley, & Hockenberry-Eaton, 1999; Newcomer & Udry, 1985). As will occur in the current study, content has been most often considered in terms of frequency of occurrence. Since evidence has shown that the quality of communication impacts sexual risk behavior, the current study will also include measures of parents' openness, comfort, and perceived skill (i.e. responsiveness) in discussing sex with their child, along the child's perception of the parents' responsiveness.

Though numerous studies on parent-child communication about sex are available, a review of 95 articles published between 1980 and 2002 on this topic (DiIorio, Pluhar, & Belcher, 2003) found that the vast majority of these studies include predominantly Caucasian samples, are cross-sectional, and examine communication between parents and children over the age of 11, after puberty has already begun. Additionally, many studies do not consider child gender in their data analyses. Each of these limitations has implications for the generalizability of these findings and, thus, will be addressed in the proposed study.

Along with differences in prevalence of STDs and HIV infection across race and ethnicity, studies suggest that sex communication rates vary across race and ethnicity with respect to topic area. In an examination of sex communication topics between 449 mother-daughter dyads (56% were black, the remainder were white), Fox and Inazu (1981) found that black mothers were more likely to discuss sexual intercourse and birth control with their daughters and were less likely to discuss conception, compared to white mothers. Hutchinson and Cooney (1998) found similar patterns of variation in parent-child sexual risk communication in a study comprised of 173 young women (46% African American, 54% white) between 19 and 20 years of age. They found that African American parents, particularly mothers, provided

significantly more information to daughters on sexual risk-related topics (i.e. contraception/birth control, protection from contracting STDS and HIV, resisting sexual pressure from partners, and postponing or abstaining from sex) than white parents. While the frequency of communications has been shown to differ, few studies have examined whether responsiveness related to sex communication varies by ethnicity (Romo et al., 2004, Lefkowitz et al., 2000), and none were found that examined African American responsiveness. Given that the majority of sex communication studies are comprised of Caucasian samples and that past findings suggest racial and ethnic differences in communication, the current study focuses in particular on African American youth.

Early communication (i.e. discussions about sex that occur prior to the child's first sexual intercourse) is associated with later age of sexual initiation, consistent condom use (Hutchinson, 2002, Miller et al., 1998) and fewer lifetime sexual partners (Clawson & Reese-Weber, 2003). In fact, Hutchinson (2002) suggested that the timing of sexual communication between teens and parents may be as critical as the occurrence of sexual communication at all. Miller and Whitaker's (2001) study supports Hutchinson's assertion. This study, which enrolled African American and Hispanic youth, demonstrated that communications about condom use prior to sexual debut were associated with subsequent condom use, whereas communications occurring in the same year of the child's sexual debut did not impact condom use. Unfortunately many parents appear to be waiting to talk with their children about sex until after puberty, when their children may already involved in sexual activities. Esenberg et al. (2006) found that parents were initiating or increasing communication about sex in response to their perception that their child was involved in a romantic relationship. Specifically, the children's ages ranged from 13 to 17 years, and the authors concluded that parent's reliance on their perception of child's

romantic relationship as a cue of initiating communications about sex may result in missed opportunities to influence their child's sexual behavior. This is particularly true given that most parents underestimate the extent to which their children are involved in sexual relationships (Jaccard, Dittus, & Gordon, 1998**)**. Thus, enhancing our understanding of parent child sex communication prior to sexual debut is important. In addition to timing, it is important to explore other factors that may influence parents' communication such as their child's gender and sexual maturation, which may be particularly relevant for pre-adolescents.

Child and parent gender play an important role in parent-adolescent sexual communication. When discussions about sex take place, it appears that mothers are the primary communicators for both genders of children (DiIorio et al., 1999; Miller, Forehand, & Kotchick, 1999; Pick & Palos, 1995). Moreover, most studies suggest sex communication is occurring more often with daughters than with sons (DiIorio et al., 1999; Lefkowitz, Kahlbaugh, Sigman, 1996 Lehr, et al. 2005). DiIorio et al. (1999) speculate that one reason for providing daughters with more information is that parents may believe that girls are more vulnerable to aggressive suitors and that information may protect them, whereas boys are more likely to be considered the aggressors. In a cross-sectional study of 371 parents, the majority of whom were Caucasian, Downie and Coates (1999) reported that the frequency of communications about sex changed depending on the age of the child. Specifically, parents communicated equally to children in preschool and began to talk to their sons more than daughters during preadolescence. While this pattern of communication contrasts studies suggesting that parents talk more to daughters, it is important to note that Downie and Coate's study was one of the very few that examined levels of sex communication at specific developmental periods. Downie and Coates (1999) also found that content of communications differed in that parents spoke with daughters about physiological

and protective issues (e.g. the dangers of rape), whereas they communicated about sexual exploration (e.g. masturbation) with sons. Studies have also shown that daughters receive more communications about sex that are negative and cautionary in nature than sons (Darling and Hicks, 1982), and that parents communicated more broadly with daughters than sons in factual and moral discussions about sexuality (Nolin & Petersen, 1992).

Consistent with the limited samples used in other areas of sex communication research literature, all of the gender studies discussed thus far had samples comprised either entirely or predominantly of Caucasian samples. Below are presented the few studies that examined gender differences in sex communication with primarily African American samples. In a cross-sectional study with African American youth (14 to 17 years old) and their mothers, Jaccard et al. (2000) found that mothers were more hesitant to talk to sons about sex than daughters; however, the study did not include a measure of frequency or content of the sex communication. Similarly, DiIorio et al. (2000) found that same-sex parent-adolescent discussions about sex were more likely than cross-sex discussions but did not measure frequency of communications in a cross-sectional study with African American parents and adolescents (11 to 14 years old).

Whereas it is important for parents to inform their children early and frequently about both informational and preventative aspects of sex, research suggests parents are engaging in sex communication variably depending on the child's gender and age. In the present study, communication between parents and their female and male children will be analyzed separately. Additionally, given that the literature indicates mothers communicate more frequently with children about sex than fathers, the focus will be on female parents' communications about sex with their children. The inclusion of non-mother female parents was made due to the prevalence of children raised primarily by other family members in the African American community. In

particular, Uhlenberg and Kirby (1998) presented demographic trends starting from 1940 until 1990 that suggested the proportion of black children (ranging from 7.6 % to 5.4% of all children) living with grandparents (with no parents present) was at least five times greater than that of white children. More recent examination of the Census 2000 Supplementary Survey/American Community Survey showed similar trends with a disproportionate number of grandmothers, relative to grandfathers, identifying as the primary caregiver for grandchildren (Minkler & Fuller Thomson, 2006). To address the prevalence of Caucasian samples in the parent-child sex communication literature and the prevalence of non-mother primary caregivers of African American children, the present study's sample will allow an observation of how gender impacts sex communication between African American female parents and their children.

Whereas the vast majority of sex communication studies are cross-sectional (DiIorio Pluhar, & Belcher, 2003), the developmental literature is indicative of the importance of examining parent-child communication about sex as a process that may change over time. Specifically, developmental studies have shown that children go through a host of biological, cognitive, and social cognitive changes that often impact family relationships (Paikoff & Brooks-Gunn, 1991). In a review of the literature on family relationship during adolescents' pubertal development, Paikoff and Brooks-Gunn found increased family conflict, along with decreases in the areas of time spent with parents, emotional closeness, yielding to parents in decision making, and reports of satisfaction regarding family functioning. Specific examination of pubertal maturation and family relations suggests that as sons and daughters increase in sexual maturation, mother-child conflict tends to increase with no apparent impact on levels of father-child conflict (Hill, et al., 1985a, 1985b; Steinberg, 1987). Only a few studies have examined how sex communication changes during a child's sexual maturation. In a qualitative study

involving African American and Latina mothers and their daughters, O'Sullivan, Meyer-Bahlburg, and Watkins (2001) found that the most common cue mothers used to initiate discussions about sex was the emergence of their daughter's physical changes (e.g. breast and hip development, menarche). Mothers and daughters reported these changes as an indicator of girls' developing sexual status. In a study comprised primarily of Caucasian fathers and their sons, Lehr et al. (2005) found increases in parent-child communications about sex during a son's time of sexual maturation. The authors concluded that parents might have perceived their son's physical maturation to be predictive of an increased risk of engaging in sexual activity, thus prompting discussions about sex.

Given the importance of the developmental period of adolescents' sexual maturation, including the changes that occur in family relationships and that preliminary research suggests that parents are using sexual maturation as a cue for increasing sex communication, a longitudinal study would allow an opportunity to observe how children's sexual maturation affects parent-child communications about sex. Furthermore, since sexual maturation occurs at different ages and rates for boys and girls, this longitudinal study will examine males' and females' communication patterns separately.

CURRENT STUDY

Overview

The present study benefits from the opportunity to study parent-child sex communication over 85 months. With cross-sectional studies providing evidence of gender differences in the content, amount and the responsiveness of communication, it is unclear whether these differences are maintained over a period of time, or if communication patterns become more similar as children get older. Moreover, the children in this study were between the ages of nine

and twelve at the first assessment, allowing for an in-depth examination of how the trajectory of communication changes over the course of the child's sexual maturation. Specifically, the relationship between sexual maturation and sex communication will be considered. Accompanying this longitudinal approach, which occurs over a critical developmental period, the current study focuses on African American families, whom the literature has historically neglected, and considers female and male adolescents in separate analyses. The following hypotheses are offered.

Research Aims and Hypothesis

The first research question is exploratory due to an absence of similar examinations in the sex communication literature. Through longitudinal analyses, the trajectory of change in sex communication (content and quality) will be examined across the ages of 9 to 16 for each gender. Second, the degree to which a child's sexual maturation is correlated to the change of sex communication over time will be examined. It is hypothesized that as child sexual maturation increases, the content of parent-child communications about sex will change such that there will be an increase in communications focused on sexual risk reduction. Whereas the literature emphasizes the importance of responsive communication, there is no evidence that suggests responsiveness relating to parent-child communications about sex would increase or decrease. Thus, examinations of changes in quality of communication are exploratory and no specific directions of change are hypothesized.

METHODS

Participants

Participants in this study were recruited to participate in a randomized controlled trial of a family- based, HIV prevention intervention program called the Parents Matter! Program

(PMP). PMP was designed to provide African American parents with the knowledge, skills, and confidence necessary to communicate about sexuality with their children in order to reduce risk for HIV and other negative outcomes associated with teen sexual behavior (Dittus, Miller, Kotchick, & Forehand, 2004). This convenience sample consisted of 1127 parent-child dyads at the baseline assessment. Participants were recruited from three sites in the southern United States (Athens, GA; Atlanta, GA; and Little Rock, AK).

In order to participate in PMP, parents had to be the primary, legal caregiver of a child in the 4th or 5th grade (between 9 and 12 years old) and have lived with this child for at least three years prior to study initiation. Parents of 4th and 5th grade children were targeted as considerable research demonstrates the importance of targeting youth prior to the onset of sexual behavior (see Armistead, Kotchick & Forehand, 2004, for a review of the relevant literature). If more than one child in the household met inclusion criteria, the oldest child was selected as the participant. All participants self-identified as African American and spoke English.

After baseline data were gathered, parents were randomly assigned to one of three conditions: a one session General Health Intervention, a one session Brief Communication Intervention designed to reduce youth sexual risk behavior, or an extended five session Enhanced communication Intervention also designed to reduce youth sexual risk behavior. The sample for the current study will consist only of those participants who were enrolled in the study comparison condition, the General Health Intervention. The 358 parent participants received information about protective health behaviors, including vaccinations, regular check-ups, and the prevention of heart disease, diabetes, and other conditions disproportionately afflicting African Americans. Thus, although these comparison families were followed for the 3

½ years of the study, they did not receive intervention related to their general parenting or parent-child sex communication.

It is also important to note that although the examination included all female parents of children, there were too few participants who identified as non-mothers (e.g. the second largest relationship type was grandmothers, which represented only 6% of parents for male or female children) to include meaningful separate analyses accounting for the different relationship types of parents. However, given the prevalence of non-biological parents in African American households, non-mother female parents remained in the analyses. Adjustments were also made to account for communications that may have taken place between co-parents and children. Specifically, if children reported higher levels of communication with co-parents on any one item for either sex communication measure, that score replaced the parents' score to reflect the highest level of sex communication children reported receiving. After these adjustments were made, it was found that less than three responses were reported at higher levels on each sex communication measure across the five assessments. Therefore, the lower parent scores were replaced with higher co-parent scores and included in the HLM analyses, but, further examination of co-parent communications was not conducted given the infrequent report of more communications with co-parents.

Recruitment

Each site (Athens, Atlanta, and Little Rock) employed a Community Liaison as part of the PMP project team. Community Liaisons were African American members of the community and recruited participants through local churches, youth and family community programs, public elementary schools, public housing, youth and family community centers, and private and public health agencies. Similar methods of recruitment were used at each site. These methods included

posting flyers at local community centers and schools, advertising in local media, word-of-mouth, and having the community liaison recruit during group functions focused on health and family topics (e.g. PTA meetings, health fairs, school open-houses).

Procedures

The community sites utilized for assessments were chosen to provide accessibility for the participants; locations included local community centers, apartment complexes, or elementary schools. At each location, dyads were greeted by on-site coordinators or interviewers, who were trained to obtain participant informed consent, maintain confidentiality, administer computerized and verbal (upon participant request) assessment instruments, and debrief participants. Once consent and assent were obtained, mothers and children were directed to separate, designated areas where data were gathered. The assessments were administered using an ACASI (audio computer-assisted structured interviews) system, whereby items were presented visually on the computer screen and audibly through headphones at each computer station. Interviewers provided training to any participant who was unfamiliar with using computers. The assessments required no more than one hour for mothers and about 30 minutes for children. For the current study, only information pertaining to the research questions was utilized from each assessment. After completing the assessments, snacks were provided, as well as $25 for each dyad to compensate for their time, transportation costs, and possible childcare costs. Children were also given a small gift, of one to two dollars' value, in appreciation of their time.

Within one month after baseline assessments were conducted, parents in the General Health Intervention group attended a 2 ½ hour presentation about protective health behaviors. Within one to two weeks following the intervention session, a post intervention assessment was administered with subsequent assessments occurring six months, one year, two years, and three

years following the intervention. At baseline assessments, 358 female parent-child dyads participated in the assessments. At the second assessment, 226 (63%) of the original mother-child dyads completed the assessments. In the third, fourth and fifth assessments, 215 (60%), 186 (52%), and 183 (51%) of the original mother-child dyads participated in the assessments respectively. In all, 154 (43%) mother-child dyads participated in five assessments and 200 (56%) in four or more assessments. One hundred twenty two (34%) mother child dyads participated in the initial assessment and did not return to any following assessments, and most of these 122 dyads were lost to follow up at the post-intervention assessment because they did not attend their intervention session.

Given the extended time lapse between assessments, several retention strategies were utilized. Birthday and holiday cards were mailed to each family 10 times each year to maintain contact with the participants and to keep track of current address information. Once a card was returned, PMP staff attempted to contact the family by phone to obtain their new address and mail them the returned card. If the staff was unable to reach the family by phone (e.g. the phone is disconnected), the participant's specified contact person was called. In some instances, the contact person was unreachable or did not know the whereabouts of the participant, at which time the directory assistance was called. Several weeks prior to an assessment, letters were mailed and calls were made to schedule participants. For additional strategies used for retention, see Armistead et al., 2004.

At the first assessment, children's ages ranged from 9 to 12 years (M=10.08, SD=.81) and at the last assessment, their ages ranged from 11 to 16 years (M=13.15, SD=.86). The majority of parents (86%,) identified as biological mothers, with 6 percent identifying as grandmothers

(22) and the remaining 8 percent was comprised of adoptive mothers, aunts, stepmothers, or "other".

Measures

Though many study measures had been developed for and previously used with African Americans, all items on each measure were piloted with individuals demographically similar to the target sample. Modifications to measures were made based on participant feedback.

Demographic Information: Parents provided information about their age, ethnicity, marital status, family income, education level, relationship to the target child, and number of people in the household. The only demographic information obtained from children was their gender, age, and ethnicity.

Sexual Maturation: The sexual maturation measure was comprised of three items for all children, with an additional two items that were specific to either males or females. Each item was completed on a 5-point response scale (1= Has not yet begun to happen; 2=Has barely started; 3=Is definitely underway; 4=Seems completed; 5=Don't know). For both male and female children, parents were asked questions about the child's growth spurt, body hair growth, and changes in skin such as pimples or acne. The additional two items for males assessed the deepening of the child's voice and the presence of facial hair. For females, the two additional items assessed the child's breast growth and menstruation. The sexual maturation measure was included in the analyses to examine its correlation with variables related to communications about sex, thus, if parents were unaware of their children's level of sexual maturation (i.e. selected "don't know" for one of the five sexual maturation questions) the relationship between sexual maturation status and sex communication would be difficult to interpret. Therefore, scores of "5"were excluded from the analyses. Reports of "don't know" appeared most

frequently at the first assessment with four percent of responses for sons' sexual maturation and two percent of responses for daughters' sexual maturation. The frequency of "don't know" responses decreased at each assessment until it was down to two percent for boys and less than one percent for daughters during the last assessment. Since the emergence of physical traits of sexual maturation are unlikely to occur at the same time and rate, sexual maturation was considered an index score, therefore, alpha coefficients were not calculated.

Content of Sex Communication: Pre-adolescents were administered 7 items assessing communication about general sex education (e.g. "How many times has your parent ever talked to you about how babies are made or where babies comes from?") and 3 items representing communication about sexual risk reduction (e.g. "How many times has your parent talked to you about condoms ".) Each item was completed on a 3 point scale such that "1" was never talked about, "2" was once or twice, and "3" was talked about it lots of times. The sex communication questions representing general sexuality education and sexual risk reduction had alpha coefficients ranging from .86 to .87 and .61 to .86 across the five time points, respectively.

Responsiveness of Sex Communication: Parents were given 17 questions to assess their perception of their level of competence and openness, including their knowledge and skills, regarding communication about sexuality with their child (e.g. "I feel prepared to talk with TC [target child] about sex topics as s/he grows up" and "If my son/daughter asked me a question about a sex topic I would get mad or angry."). Parents responded "not at all true" (1), "a little true" (2), or "very true" (3). The alpha coefficient for this measure ranged from .79 to .82 across the five assessment times.

Children were administered six questions, which were designed to parallel similar questions included in the parent measure (e.g. "If I asked [about a range of sex topics, examples

of which are provided at the top of the page], my parent would get mad or angry."). Responses range from a "0" for no, a "1" for yes, and a "2" for don't know. Across the five assessments, alpha coefficients ranged from .66 to .74.

Creating Composite Scores

In the process of combining variables to form composite scores for each of the four outcome measures (i.e. general sex communication, reduced risk sex communication, child report of parent responsiveness and parent reports of responsiveness) frequency distributions were run and revealed a range of zero to six percent of responses missing in each measure across the five assessment times. Using SPSS 12.0 Missing Values Analysis (MVA), missing scores were imputed by conducting regression based imputation, which uses moderately correlated variables in the data set to predict the missing values. MVA also includes randomly chosen error terms from the observed residuals of complete cases to be added to the regression estimates to increase variability in the distribution of the replaced values. Predictors included variables from measures that were both included in the current study and from measures that were collected for the larger Parents Matter! Program project (e.g. measures of parent monitoring, parent-child relationship, perceived risk).

RESULTS

Preliminary Analyses

Since there was a large number of parent- child dyads with missing data, a series of logistic regressions were run to determine whether variables of interest (i.e. Eight variables in total with all outcome variables, child age, sexual maturation, and demographic variables, including parents' income and education level) at the initial assessment would predict any absences at future assessments. Logistic regressions were run separately for sons and daughters

and two significant predictors of parent-son absences were found. Specifically, the son's level of sexual maturation, (β= .35, $p < .01$) and age (β= .04, $p < .05$) were significant predictors of future absences. Furthermore, the predictors in the model combined to accounted for a substantial proportion of variance in future attendance, χ^2 (8, $N = 158$) = 65.51, $p< .01$, Cox and Snell R^2 with Nagelkerke's R^2 adjustment = .46. No variables were significant predictors of whether parent-daughter dyads missed future assessments. The reason for the lack of significant predictors for mother-daughter dyads is unclear; however, anecdotal conversations with parents suggested that, as sons were increasingly engaged in extracurricular activities such as football, they were unable to attend assessments, which typically took place after school during the weekday. Thus, age and puberty would predict future absences for sons as their participation in extracurricular activities would increase as they got older, but would be insignificant for daughters. Fortunately, when data is imbalanced due to missing values, HLM is able to estimate the missing data from the available data for each individual, as well as provide a model-based trajectory estimated from data collected in the larger sample.

Next, correlational analyses were conducted to determine if there were significant relationships between any of the variables included in each model, and results are presented in Tables 1 and 2. The correlations were based on data collected from parents and children at the first assessment to provide a preliminary understanding of the association between variables. For daughters, the content (i.e. sex education and sexual risk reduction) and quality (i.e. parent and child reports of parent responsiveness) of communications were all significantly correlated with each other in a positive direction. For sons, there were positive relationships between child reports of parent responsiveness and content of communications but not between parent reports of responsiveness and either sex education or risk reduction communication.

The correlational analyses conducted on data from the first assessment provided a preliminary glimpse of the relationships age and sexual maturation have with the outcome variables. For daughters, age was positively associated with both types of communications: sex education and sexual risk reduction. Sexual maturation was related to communications about sex education and the daughters' report of parent responsiveness. For sons, there was only one significant relationship; sexual maturation was positively correlated with parent reports of responsiveness. Additionally, there was a positive relationship between age and sexual maturation at the initial assessment for daughters but not for sons. The absence of this relationship for boys was not surprising given that most were too young (9-12 years old) to have begun this process at the first assessment. The correlation may grow stronger for boys as time passes, and subsequent longitudinal analyses will allow a more clear understanding of the relationship between sex communication and two time varying predictors, age and sexual maturation.

Regarding the demographic variables for both genders, family income was only correlated with parent education level, whereas education level was significantly correlated with several variables, including parent responsiveness for both genders. The relationship was such that higher education level was associated with parent reports of greater responsiveness. Interestingly, higher levels of education were also related to parent reports of lower communication with daughters about sex prevention.

For the present study, Hierarchical Linear Modeling (HLM) was utilized to examine how parent-child sex communication changes over time, and how change in sexual maturation is associated with the rate of change of communication. HLM provides the opportunity to model both time invariant and time varying predictors with nested data, or longitudinal data in which

several measurements share the same reporter (Singer & Willett, 2003). Furthermore, HLM analyses handle missing cases more efficiently and provide more precise estimates than Ordinary Least Squares methods. Analyses were conducted using the HLM 6.06 software package, and full maximum likelihood was used to fit all the models.

HLM contains two levels of analyses: Level 1 measures individual change and contains time varying predictors (e.g. sexual maturation), growth parameters (i.e. intercept and slope), and a within person residual; Level 2 contains fixed effects (e.g. demographic variables) and examines the extent to which there is variability between subjects by taking into account that each individual will have unique intercepts and slopes. For this study, age (months) of the children was selected as the temporal predictor to mark the passage of time, rather than assessment time (wave). The data set for the current study was unbalanced such that children's ages were heterogeneous at each assessment time (i.e. ages ranged 3 to 4 years apart across the five testing times) and measurement occasions varied such that some participants were measured months apart within the same wave. Accordingly, age was the preferred temporal predictor because it provided precise information about each child at each time of testing, and HLM handles unbalanced data well (Singer and Willet, 2003). Fixed effects of the demographic variables (i.e. parents' income and education level) were entered as covariates at level 2.

The first research question aimed to explore the change in trajectory of sex communication (content & quality) for children across the ages of 9 to 15. At this level of analysis, the intercept was centered by subtracting 108 months from each child's age to represent the amount of parent sex communication occurring at the average age of children at Time 1, and a slope term represented an estimation of the linear rate of change over months. A quadratic term was also added to the model to test for curvature in the rate of change over the five time

points. This model was run eight times with each communication variable (i.e., communication about general sexual education, communication about sexual risk reduction, parent report of responsiveness, & child report of responsiveness) run separately for each child gender. These analyses addressed the first research question by providing estimates of sex communication patterns between mothers and their children across the five assessment times. The second research question was addressed by entering the child's level of sexual maturation, a time varying predictor, and an interaction term of age and maturation at level 1 into the previously described models, resulting in an additional eight analyses. The intercept in this model was centered at children's sexual maturation status at average levels of parent-child communications about sex at the first assessment. The main effect represented the association of change in sexual maturation on changes in level of sex communication. The inclusion of an interaction term allowed an examination of the effect of change in sexual maturation on change in slope of sex communication.

Research Question 1

For the eight unconditional growth models, a linear relationship between each outcome variable and time was first explored by entering the time variable into the model. Then, to examine whether the rate of change may be non-linear, a quadratic term was included in each model by squaring the time variable of age in months. If the quadratic term was significant, then it was reported in place of the unconditional linear growth model because it provided a more accurate understanding of the trajectory of change in communication over time.

Communication about General Sex Education. Daughter reports of general sex education communication revealed a significant non-linear trajectory over time, such that at 108 months there was an average of 7.44 points (SE = .65, p < .01) with an instantaneous increase (i.e.,

linear slope) of .13 (*SE* = .03, $p < .01$) and a curvature (i.e., quadratic term of -.001 (*SE* = .0005, $p < .05$ see Table 3 and Figure 1) resulting in deceleration in the rate of communication over time. For sons, the mean level of general sex communication at 108 months of age was 6.5 (*SE* =.44, $p < .01$) which increased .04 points per month (*SE* =.01, $p < .01$: see Table3 and Figure 2). There was no evidence of a quadratic effect for son reports of general sex communication.

Communication about Sexual Risk Reduction. Unconditional growth models suggest communication about risk reduction significantly increased over time for both daughters and sons. The average level of risk reduction communication for daughters at 108 months of age was 2.02 (*SE* =.18, $p < .01$) with an increase of .04 points each month (*SE* =< .01, $p < .01$: see Table 3 and Figure 3). At the same age, sons reported communication levels at 1.45 (*SE* =.23, $p < .01$) which increased .04 points each month (*SE* =.01, $p < .01$: see Table 3 and Figure 4). There was no evidence of a quadratic effect of sexual risk reduction communication for sons or daughters.

Child Reported Parental Responsiveness. When the same models were used to examine the trajectory of change in responsiveness, a pattern emerged such that children reported increasing levels of responsiveness over time. At 108 months of age, daughters reported 14.33 points on the measure of responsiveness (*SE* =.22, $p < .01$) with an increase of .02 points each month (*SE* =.01, $p < .01$: see Table 3 and Figure 5). Son reports revealed that the average level of responsiveness was 13.59 points at 108 months (*SE* =.29, $p < .01$) which increased constantly at .03 points per month (*SE* =.01, $p < .01$: see Table 3 and Figure 6). Quadratic effects were not significant for son or daughter reports of parental responsiveness.

Parent Reported Responsiveness. Consistent with daughter reports, unconditional growth means models revealed that parents of daughters reported increasing levels of responsiveness over time (Figure 7). Parents reported 41.36 points of responsiveness (*SE* =.01, $p < .01$) at an

average age of 108 months with a slope of .05 (*SE* =.01, $p < .01$). There was no evidence of a quadratic effect for parent reports of responsiveness for daughters. However, for boys, the quadratic term was significant and revealed a curvature in the rate of change of parent responsiveness. At 108 months of age, parents of sons reported average levels of responsiveness at 38.95 points (*SE* = .68, $p < .01$) with an instantaneous rate of change of .16 (*SE* =.03, $p < .01$) and a curvature of -.001 (*SE* = <.01, $p < .01$: see Table 3 and Figure 8), such that over time the initial increase in parent responsiveness is not maintained and begins to decelerate.

Since the unconditional growth models were run separately by gender, it was unclear whether the trajectories of change in communication differed by gender. The daughter and son data were merged and unconditional growth models were rerun for each outcome variable with gender placed at Level 2 to test for cross-level effects of gender on slope and intercept. The rate of change of communication did not differ significantly by gender for any outcome variable, whereas intercept differences were found such that at 108 months daughters, relative to sons, received more sex education communication (γ_{01}= 2.16, *SE* = .59, $p < .01$), sex risk reduction communication (γ_{01}= .57, *SE* = .29, $p = .05$), and higher levels of daughter reports of parent responsiveness (γ_{01}= .75, *SE* = .36, $p < .05$.).

Research Question 2

The second research question aimed to examine the degree to which a child's sexual maturation was correlated to the change of sex communication and responsiveness over time. Child sexual maturation was added to the unconditional growth model at level 1, whereas parent education and family income were added at level 2 to account for the effects of these variables. The intercept in these models were centered at the level of children's sexual maturation at average levels of communications at the first assessment. Since the results of the unconditional

growth models revealed two significant quadratic terms for parent responsiveness of sons and communication about sex education for daughters, the quadratic terms were added in their subsequent models and not to the other six models. The results of the eight models are presented in Table 4.

It was hypothesized that as sexual maturation increased, communication and responsiveness levels would also increase. Unexpectedly, there were only two main effects of sexual maturation that were significant (see Table 4), one of which was qualified by a significant interaction term. The results suggested that when sons' sexual maturation increased, parent responsiveness also increased (γ_{40} = .38, *SE* = .18, $p < .01$). Additionally, for sons at 108 months of age, initial parent responsiveness levels were at 38.72 points (*SE* = .75, $p < .01$) and increased significantly as parent education levels increased (γ_{01}= 1.29, *SE* = .40, $p < .01$). Furthermore, there were significant changes over time in the level of parent responsiveness such that the initial rate of change was positive but eventually responsiveness decreased as children got older. Since the initial parent responsiveness level did not vary by income and rates of change did not vary significantly by income or education, these variables were removed from the model and resulted in minimal change in model deviance ($\chi^2_{(3)}$ = 1.06, $p > .05$).

In order to determine the association of change in sexual maturation levels on change in the slope of sex communication, an interaction term of age (and age squared for parent responsiveness of sons and sex education for daughters) and maturation were entered at level 1. The only significant interaction term was associated with the daughter reports of communication about sex education. The results of the model indicated that at 108 months of age, daughters' reported 6.5 points of sex education communication with an initial increase of .05 and that over time the rate of communication slowed down by -.002 points. The interaction term suggests that

sexual maturation has an effect on both the linear initial increase in communication and the curvature of the rate of change in communication. Specifically, as sexual maturation increases, the initial increase in communication slows down by -.03 points (SE = .03, p < .01), and over time, an increase in sexual maturation reduces the decline (γ_{50} < .01, SE < .01, p < .01) in parent-daughter communication about sex education.

There were additional significant findings involving the demographic variables at level 2. Specifically, income and education were shown to have an impact on the initial levels of communication and rate of change for son reports of parent responsiveness and daughter reports of sex risk reduction. As parents' education levels increased the initial level of son reports, at 108 months of age, the amount of parent responsiveness increased .54 points (SE = .24, p < .05). Income did not have a significant impact on either the intercept or rate of change and education did not impact the rate of change of child report of parent responsiveness. Subsequently, these variables were removed from the model and resulted in minimal change in model deviance ($\chi^2_{(3)}$ = .79, p > .05). Income was found to have an effect on the initial level of sex risk reduction communication with daughters at the age of 108 months as well as the rate of change of communication over time. As parents' income increased, the initial levels of sex risk reduction communication with daughters increased (γ_{01}= .24, SE = .12, p < .01) whereas the rate of change of communication slowed down (γ_{11}= -.01, SE < .01, p < .01). Sex risk reduction communications with daughters did not appear to vary by parents' education and removal of the variable did not cause a significant reduction in a significant reduction in model deviance ($\chi^2_{(3)}$ = 2.64, p > .05). It is important to note that deviance tests were not used to justify removal of

variables from every model due to missing data that occurred when variables were removed from some models.

Table 1. *Correlations among Variables at First Assessment for Daughters*

Variable	Sex education	Risk Rdctn	Child Rspvns	Parent Rspvns	Age	Sex Maturation	Education	Family Income
Sex Education	--	.69**	.41**	.26**	.21**	.16*	-.02	.02
Risk Reduction		--	.29**	.18**	.23**	.07	-.16*	-.01
Child Responsiveness			--	.24**	.12	.17*	.10	.08
Parent Responsiveness				--	.08	.05	.15*	.11
Age					--	.40**	-.03	.04
Sex Maturation						--	.15*	.13
Education							--	.47*
Family Income								--

* *p<.05* ***p<.01*

Table 2. *Correlations among Variables at First Assessment for Sons*

Variable	Sex education	Risk Rdctn	Child Rspvns	Parent Rspvns	Age	Sex Maturation	Education	Family Income
Sex Education	--	.64**	.33**	.04	-.02	.01	02	-.04
Risk Reduction		--	.43**	.12	.12	.08	-.07	-.11
Child Responsiveness			--	.17	.12	.01	.15	<.01
Parent Responsiveness				--	-.06	.16*	.29**	.11
Age					--	.09	-.28	-.14
Sex Maturation						--	-.02	.04
Education							--	.43**
Family Income								--

* *p<.05* ***p<.01*

Table 3. *Unconditional Growth Models with Linear and Quadratic Terms*

		Sons				Daughters			
Parameter		Sex Education (SE)	Risk Rdctn (SE)	Child Rspvns (SE)	Parent Rspvns (SE)	Sex Education (SE)	Risk Rdctn (SE)	Child Rspvns (SE)	Parent Rspvns (SE)
Fixed Effects									
For Intercept Intercept	γ_{00}	6.5** (.44)	1.45** (.23)	13.59** (.29)	38.95** (.68)	7.44** (.65)	2.02** (.18)	14.34** (.22)	41.36** (.40)
For Age Intercept	γ_{10}	.04** (.01)	.04** (.01)	.03** (.01)	.16** (.03)	.13** (.04)	.04** (.00)	.02** (.01)	.05** (.01)
For Age^2 Intercept	γ_{20}	<.01 (<.01)	<.01 (<.01)	<.01 (<.01)	-.001** (<.01)	-.001* (<.01)	<.01 (<.01)	<.01 (<.01)	<.01 (<.01)
Variance Components									
Level 1: Within Person	σ_ε^2	2.60 (6.76)	1.27 (1.61)	1.79 (3.21)	2.38 (5.67)	2.32 (5.39)	1.37 (1.88)	1.65 (2.72)	2.44 (5.96)
Level 2: Intercept	σ_0^2	3.86** (14.94)	2.07** (4.30)	2.38** (5.65)	4.76** (22.62)	4.23** (17.85)	1.56** (2.45)	2.02** (4.10)	4.15** (17.24)
Rate of change	σ_1^2	.06** (<.01)	.04** (<.01)	.04** (<.01)	.06** (<.01)	.08** (.01)	.02** (<.01)	.04** (<.01)	**.07 (.01)

* *p<.05* ***p<.01*

Table 4. *Communication over Time with Age (or Age^2) and Sexual Maturation Interaction Terms*

		Sons				Daughters			
Parameter		Sex educ (SE)	Sex prvtn (SE)	Child rspvns (SE)	Parent rspvns (SE)	Sex educ (SE)	Sex prvtn (SE)	Child rspvns (SE)	Parent rspvns (SE)
Fixed Effects									
Intercept		6.67** (.49)	1.64** (.25)	13.56** (.31)	38.72** (.75)	6.5** (.44)	2.15** (.21)	14.46** (..25)	41.19** (.45)
Income (level 2)	γ_{00}	--	--	--	--	--	.24* (.12)	--	--
Education (level 2)	γ_{01}	--	--	.54* (.24)	1.29** (.40)	--	--	--	--
Age	γ_{02}	.03* (.02)	.03** (.01)	.03** (.01)	.18** (.04)	.05** (.01)	.04** (.00)	.02 (.01)	.05** (.02)
Income (level 2)	γ_{10}	--	--	--	--	--	-.01* (<.01)	--	--
Age^2	γ_{11}	--	--	--	-.002** (<.01)	-.002* (<.01)	--	--	--
Sex Mat.	γ_{40}	-.11 (.15)	-.001 (.07)	.05 (.09)	.38* (.18)	.57** (.22)	.09 (.06)	.07 (.08)	.07 (11)
Age*Sex mat.	γ_{20}	<.01 (<.01)	<.01 (<.01)	-.0005 (<.01)	-.01 (.01)	-.03* (.01)	-.0003 (<.01)	<.01 (<.01)	-.003 (<.01)
Age^2*Sex mat.	γ_{30}	--	--	--	<.01 (<.01)	<.01* (<.01)	--	--	--
Variance Components	γ_{50}								
Level 1: Within Person		2.60 (6.77)	1.27 (1.62)	1.79 (3.21)	2.36 (5.56)	2.30 (5.31)	1.38 (1.9)	1.65 (2.74)	2.44 (5.94)
Level 2: Intercept	σ_ε^2	3.85** (14.86)	2.03** (4.11)	2.28** (5.22)	4.39** (19.24)	4.14** (17.11)	1.5** (2.26)	1.93** (3.72)	4.11** (16.87)
Rate of change	σ_0^2	.06** (<.01)	1.27** (1.62)	.04** (<.01)	.06** (<.01)	.07** (.01)	.01* (<.01)	.04** (<.01)	.07** (.01)

Note: All variables are entered into the model at Level 1 unless otherwise indicated.

* *p ≤.05* ***p≤.01*

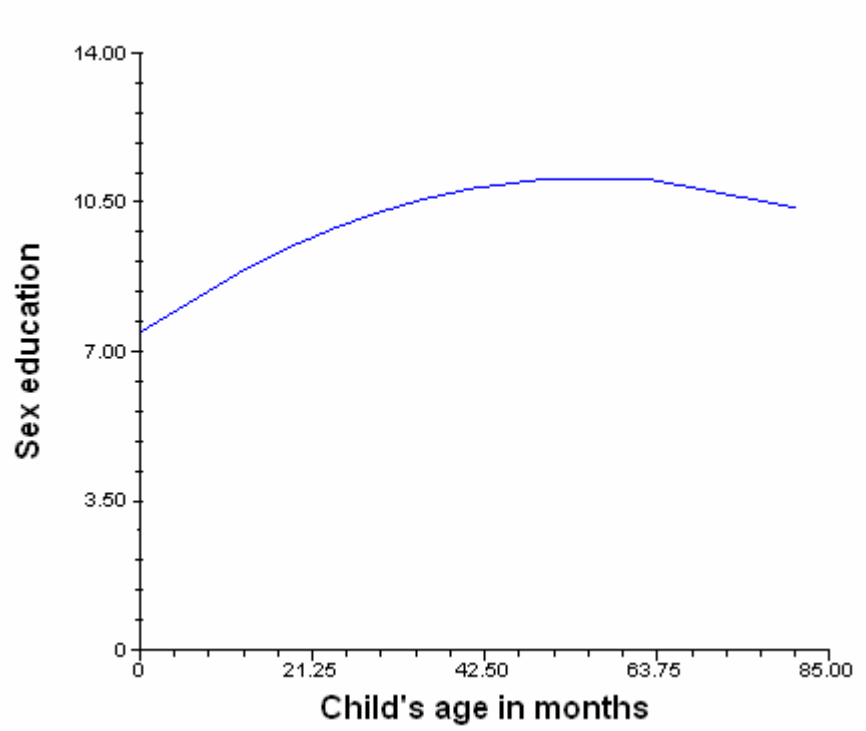

Figure 1 Non-linear change in sex education over time for daughters

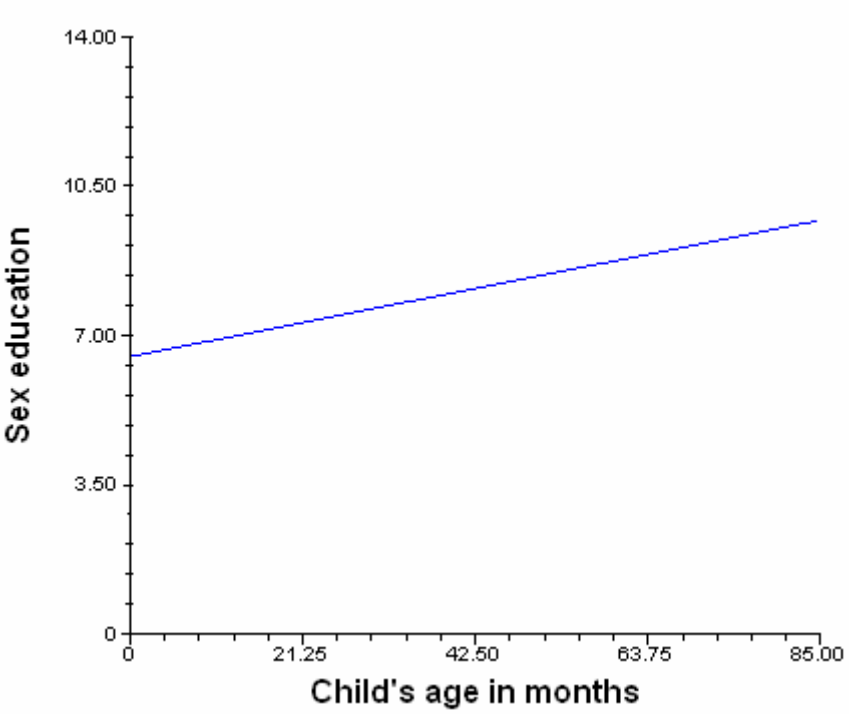

Figure 2 Change in sex education communication over time for sons

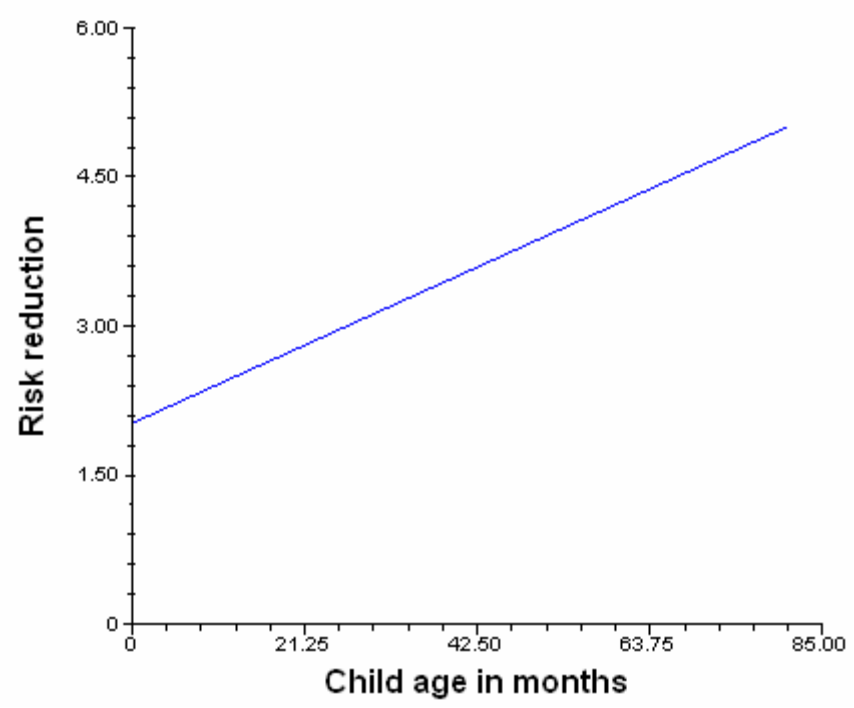

Figure 3 Change in sexual risk reduction communication over time for daughters

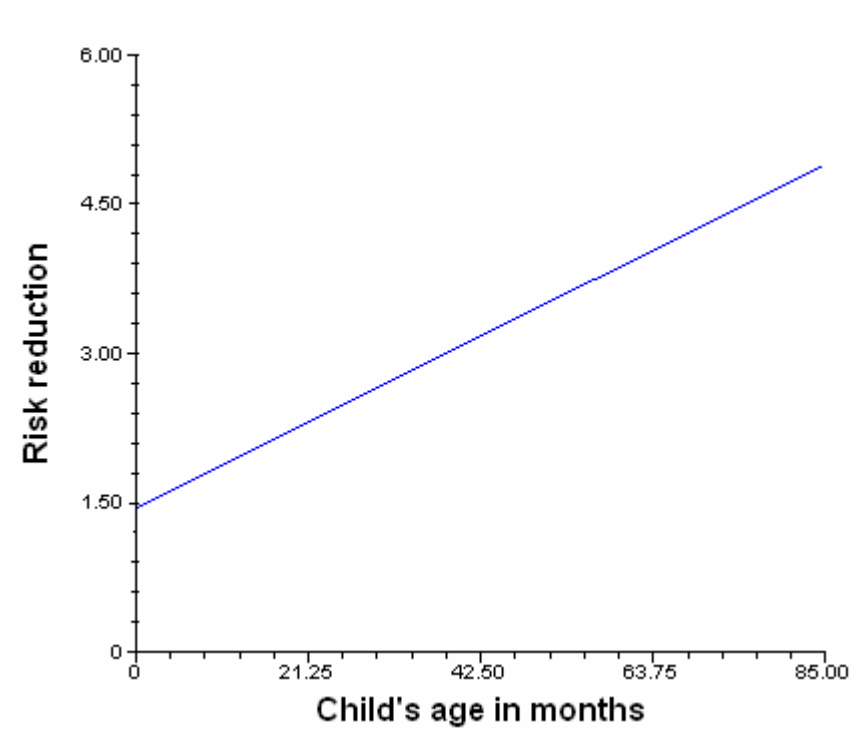

Figure 4 Change in sexual risk reduction communication over time for sons

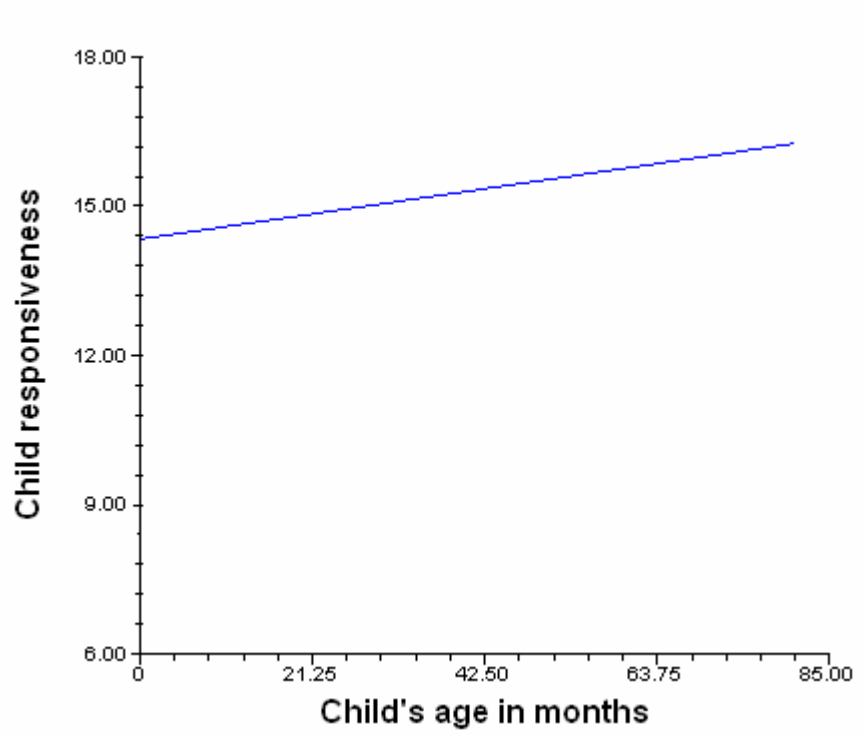

Figure 5 Change in child responsiveness over time for daughters

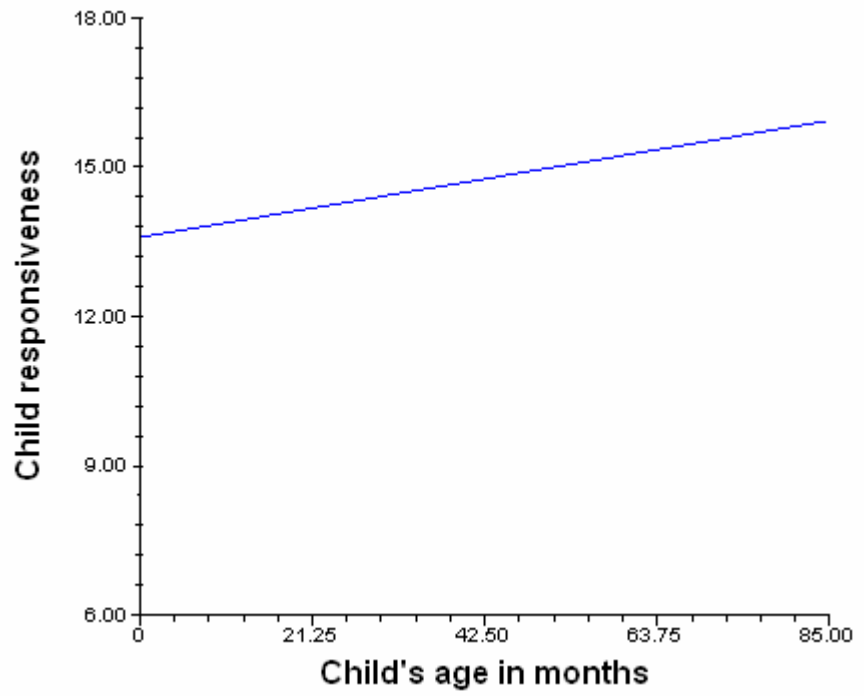

Figure 6 Change in child responsiveness over time for sons

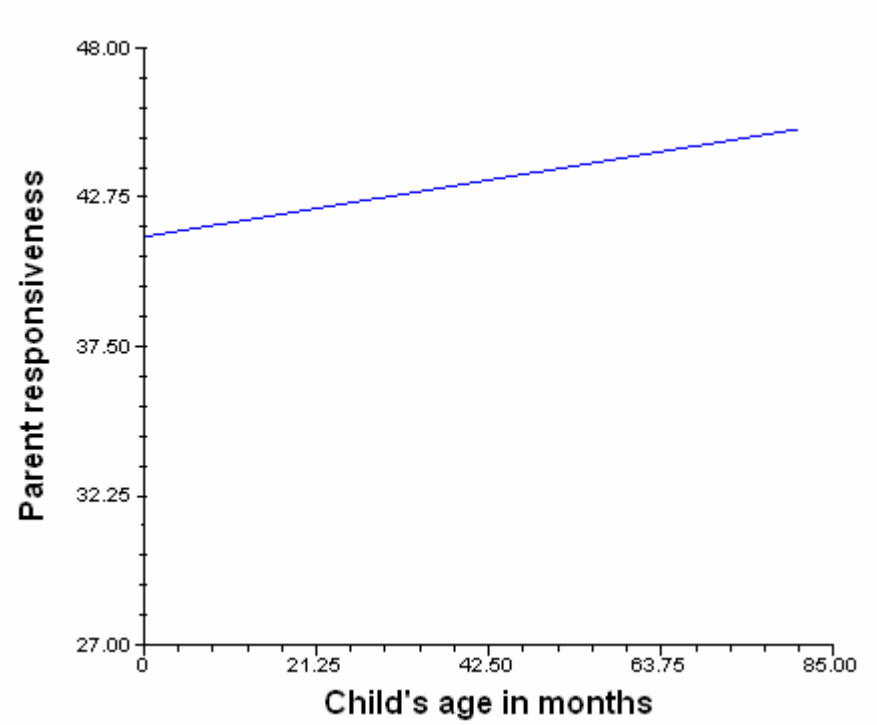

Figure 7 Change in parent responsiveness over time for daughters

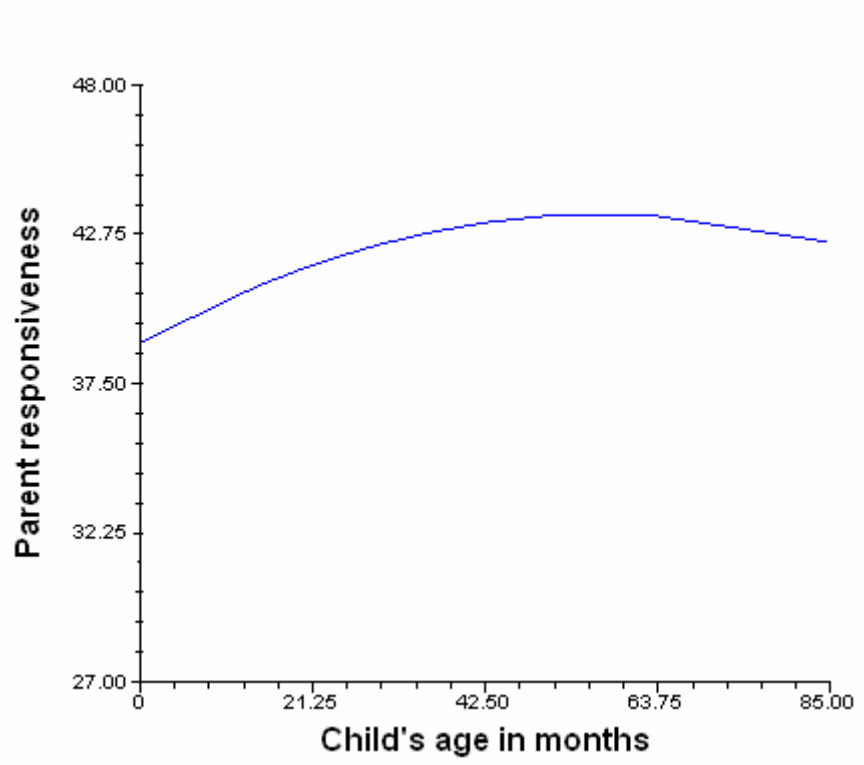

Figure 8 Non-linear change in parent responsiveness over time for sons

DISCUSSION

The present study was conducted to gain an understanding of how sexual communications between parents and children change over time. Specifically, within African American families, the study examined the trajectory of change in mother-child communication over a period of three years in the areas of communication about sex education, communication about risk reduction, and child and parent report of parent responsiveness (i.e., openness to and comfort with parent-child communication about sex). Analyses were conducted separately by child gender and also included an examination of the relationship between a child's sexual maturation and change in communication over time. Accordingly, one hypothesis was made for the study with the first aim serving as an exploratory examination of how parent-child communications changed across 85 months, the time spanning from the first assessment until the last assessment. The second hypothesis posited increases in communications about sexual risk reduction, but not sex education, as children's sexual maturation level increased. No specific directions of change were hypothesized for responsiveness of communication as this variable has only been minimally addressed in the extant literature. Below, a discussion of the results is presented by outcome variable.

Results of analyses to address the first hypothesis revealed that all outcomes of communication content (sex education & risk reduction) and quality (responsiveness) for both genders had significant linear or curvilinear rates of change over time. Turning first to content of communications, parent-child communications about sexual risk reduction steadily increased as children of both genders got older. That is, with increasing age, parents of daughters and sons increased their communications about how to protect oneself from unwanted pregnancy, STDs, and HIV. In contrast, only parents of sons showed a linear increase in communications about sex

education, whereas the change in parent-daughter communication about sex education demonstrated a curvilinear relationship, with an initial increase in communication about these topics followed by the rate of change decelerating as daughters' age increased.

Notably, and consistent with previous findings (DiIorio et al., 1999; Miller, Forehand, & Kotchick, 1999; Pick & Palos, 1995), results from the present study revealed that daughters received more sex communication than sons. Specifically, at the average age of children at the first assessment, 108 months, daughters received more communication about both general sex education and sexual risk reduction. Higher overall rates of communication between parents and daughters, compared to parents and sons, is not surprising. The majority of the parents in this study are mothers, and studies have found evidence of gender differences in communication such that mothers are more comfortable and open talking about sex with female, relative to male, children (Jaccard, J., Dittus, P. J., & Gordon, 2000). Given the relatively high rates of communications about sex education for daughters, and that general sex communication provides factual information that does not focus on behavior change, it was not surprising that communication did not increase consistently over time for girls. However, communication that emphasized sexual risk reduction continued to increase over time for both sons and daughters, reflecting a shift in the content of parent-child communications about sex as their children get older.

For quality of communication or responsiveness, both sons and daughters perceived their parents as more open to sex communications over time. Additionally, parents of daughters reported being more responsive to sex communication as their daughters aged. However, the change in parents report of responsiveness to sons was curvilinear with an initial increase in responsiveness as sons aged, followed by a deceleration in responsiveness. Given that the quality

of communication has been shown to impact sexual risk behavior (Whitaker, Miller, May & Levin, 1999; Fasula & Miller, 2006), this finding was of concern but is mitigated by sons' reports that parental responsiveness increased steadily over time. The differences in child and parent report on the trajectory of change in responsiveness may be explained in a number of ways and is not inconsistent with previous research. Reports of responsiveness are particularly subjective in nature and likely based on a number of factors, including the overall quality of the parent-child relationship. Given this, it is not surprising that several researchers have found similar inconsistencies between parent and child reports on communication behaviors (Newcome & Udry, 1985; Jaccard, J., Dittus, P. J., & Gordon, 2000). Additionally, the child and parent measures of responsiveness in this study differed. Parent measures included more items than the child measure. While both parents and children reports of responsiveness have theoretical importance, it can be argued that children's perception of responsiveness plays a more relevant role in the likelihood that communication will impact their behavior. In any case, the deceleration in parent report of responsiveness to sex communication with their sons may be explained by developmental studies that indicate general increases in family conflict and decreased family closeness during children's adolescence period (Paikoff & Brooks-Gunn, 1991). A possible reason that the decline in parent responsiveness was not seen with daughters may be due to the study's examination of communications with mothers, which included cross-gender communications with sons. Importantly, this finding is qualified by analyses that include consideration of son's sexual maturation and is discussed further below.

Significant findings addressing the second hypothesis were limited. Level of sexual maturation was found to be associated with only one area of sex communication content for either sons or daughters. Specifically, sexual maturation was found to be associated with the

trajectory of change in general sex education communications for daughters. As daughters increased in age, the rate of discussions about general sex information slowed down. However, as daughters became more sexually mature, the rate of decline of communications became less steep. Although parents reduced the decline in general sex communications in association with their daughters' increased sexual maturation, it was hypothesized that parents would respond to their child's development by increasing communications about sex risk reduction. One explanation for the lack of increased risk reduction communication is provided in Figure 3, which illustrates a steep increase in communication over time. This suggests the possibility that parents are already talking to their daughters at such a high level that sexual maturation did not provide further increases in communication. There is also an inherent limitation of the measure, which included only three items to represent communication about sexual risk reduction.

For boys, sexual maturation did not appear to be associated with communications of either sex education or sex risk reduction. In addition to the limited items included in the sex risk reduction measure, another potential explanation for the lack of significant findings for boys is based on a study by Dorn et al. (1990). These researchers examined the reliability of parent reports of adolescent puberty. Dorn et al. found that parents (58 out of 75 were mothers) tended to underestimate their children's level of sexual development and were more accurate reporters of daughters' sexual development than sons' development. Dorn and colleagues attributed their findings to more obvious secondary signs of development for daughters (i.e. early breast development) than for sons. Moreover, given that one of the five items measuring sexual maturation assessed the growth of pubic hair, it is likely that mothers would have more information regarding their daughters' hair growth than their sons'. If parents were apt to be less accurate and underestimate sons' sexual maturation, then it stands to reason that it would be

more difficult to find associations between sons' sexual maturation and sex communications content and responsiveness.

Regarding the quality of sex communication, the study found that sexual maturation was not associated with mother or daughter reports of parent responsiveness. While parents and daughters are reporting increasing levels of parent responsiveness as time passes, it appears that factors other than daughter's sexual maturation are accounting for that increase. Even though sexual maturation was the only variable examined as a predictor of responsiveness, the absence of significant findings reinforces the importance of intervention programs such as Parents Matter! Program, which are designed to provide parents with the skills, knowledge, and confidence to have open communications with their children about sex.

When sexual maturation is considered in parent reports of responsiveness with sons, the rate of declining responsiveness slows down as sons' maturation levels increase. In other words, as discussed earlier and as shown in Figure 8, female parents are becoming less open and comfortable talking to their sons about sex as they get older; however, as sons are increasing in sexual maturation, parents are responding by being more responsive to sex communications. A possible explanation for this effect is that parents may perceive their son's physical changes to be predictive of an increased risk of engaging in sexual activity and as a result are more open and receptive to discussions about sex.

There were several limitations in the study that may have contributed to the limited findings and can help inform future studies. As mentioned previously, the sex risk reduction measure included only three items and did not fully capture the range of sexual risk reduction communications that may have taken place between parents and their children. An additional limitation for both the general sex education and sex risk reduction communication measures

was found in the wording of each question. Specifically, the questions at each of the five assessments were worded for parents to report the degree to which communications had "ever happened", rather than communications that had occurred since the last assessment. As a result, the measure does not necessarily reflect decreases in communications over time. Whereas the decision to examine only communications with female parents was based on numerous studies suggesting that mothers were the primary communicators of sex communication, future studies would benefit by including fathers and other male parents in analyses. An inclusion of male parents would allow observations of whether trajectories of change in communication are different relative to female parents and whether male parents respond differently to their children's sexual maturation increases.

Despite these limitations, the present study addressed several gaps in the sex communication literature by using longitudinal analysis on an entirely African American sample and by considering children's gender in the analyses. The results suggest that female parents may be using different cues for sons and daughters to influence amounts of sex communication. In this study, parents reduced the rate of decline in communications about general sex information as their daughters became more sexually mature. Interventions that are developed to increase parent-child communications can use this information to reinforce parent-child communications about general sex education but also stress the importance of increasing communications about sex risk reduction over time.

Overall, female parents are talking significantly more to their daughters than their sons at 108 months of age. Over time it appears that parents are not increasing their rate of communication for sons, relative to daughters, in order to make up for the initial discrepancy in amount of communication. Although it is likely that sons are receiving communications about

sex from non-female parents or other caregivers, the current study revealed infrequent reports of higher co-parent scores on the sex communication measures. Children are also likely to have communications with peers and teachers about sex; however, sex communication literature emphasizes the importance of parents' involvement in sex communication due to their ability to have timely communications (i.e. prior to sexual debut) that are sequential (i.e. communications about sex build from one conversation to the next) and continuous (i.e. occurs more than once) (Miller, et al., 2007). Given the importance of parent-child sex communications and the prevalence of single-parent families, the study's findings of discrepant amounts of sex communication suggest that mothers may benefit from increased support and help through continued interventions to facilitate sex communication with sons. Furthermore, interventions can be guided to address the finding that parent responsiveness regarding sex communication with sons decreases over time by acknowledging the difficulty and discomfort female parents may experience in talking to their sons about sex as they get older. By helping parents predict the declines in responsiveness that may occur as their sons get older, parents can be equipped with skills and practice to overcome this decline and become more open and comfortable talking to sons about sex as they become older and are more likely to engage in sexual behavior. While it is encouraging that child reports of parent responsiveness and daughter reports of parent responsiveness continued to increase over time, it is also important for continued work to help parents become responsive from the onset of parent-child communications about sex. High levels of parent responsiveness when sex communication first begins may help establish a sense of openness and facilitate the child's comfort and likelihood in talking to their parents about sex over the course of their relationship.

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