The Influence of Parental and Parent-Adolescent Relationship Characteristics on Sexual

Trajectories from Adolescence through Young Adulthood

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Abstract

Using the perspective of sexual script theory (Gagnon & Simon, 1973) and growth curve

modeling, this study examined whether characteristics of parents and parent-adolescent

connectedness influence change in lifetime number of sexual partners from adolescence through

young adulthood. Living in a blended family, having at least one college-educated parent and on-

time parent-adolescent sexual communication positively predicted later lifetime number of

sexual partners. Parent religiosity and parent-adolescent connectedness negatively predicted later

lifetime number of sexual partners. Parent-adolescent sexual communication that focused on

negative consequences of sex and parent disapproval of adolescent sexual activity were not

significant in the overall model. Control variables included adolescent race/ethnicity, gender,

physical maturity, marriage history, virginity pledge history, and expectations of positive

consequences of sex. Physical maturity and gender were not significant in the overall model. In

conclusion, parents have significant and far-reaching influence on their children's later sexual

behavior. This study extended research in the field by examining lifetime number of sexual

partners across four time points, which allowed observation of change in this outcome variable

with age and accounted for the nested nature of the data.

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My parents first dreamed I would go to college and though they did not know the way, their unconditional love and support have served as a source of comfort as I navigate destinations further than they ever expected. I am grateful to have the friendship of my travel companions Bradford Wiles, Caitlin Faas, and Danielle Skurka who have not only served as sounding boards but also have provided much-needed advice and encouragement. Lastly, I would like to give special thanks to Cara Cheshire, Michael Asaro, and Jonathon Brown for listening and telling me what I needed to hear when it came time for me to knuckle-down.

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Introduction

Adolescent sexual behavior typically occurs in the context of a relationship (Florsheim, 2003; Moore & Rosenthal, 2006). More than 80% of adolescents aged 18 have experience with romantic relationships (Carver, Joyner, & Udry, 2003) and romantic relationships are important for individual adjustment and development (Collins, Welsh, & Furman, 2009). However relationships are also a context for risk. Sexually active adolescents and young adults continue to be the age group most at risk for acquiring a sexually transmitted disease (STD). The Centers for Disease Control and Prevention estimate that 19 million new STD infections occur each year and these infections account for an annual expenditure of $16.4 billion by the U.S. healthcare system (Centers for Disease Control and Prevention (CDC), 2010). Of the estimated 19 million new STD infections occurring each year, nearly half of those infected are people 15 – 24 years of age (Weinstock, Berman, & Cates, 2004). Life-time number of sexual partners is a risk factor for acquiring STDs, particularly for those who do not use condoms consistently (Santelli, Brener, Lowry, Bhatt, & Zabin, 1998). Because navigating intimate relationships is important for socio-emotional development and because relationships involve exposure to risk, it is important to examine how parents might address how adolescents approach this task. The purpose of this study was to examine parental influences on the growth or increase in life-time number of sexual partners, from adolescence through young adulthood.

Sexual Script Theory

Sexual script theory (SST), developed by Gagnon and Simon (1973), was used to contextualize the adolescent and young adult sexual behavior outcomes. Gagnon and Simon introduced SST in order to further explore and understand the acquisition of sexual culture, which refers to sexual beliefs, preferences and behaviors. They theorized that sexual culture is

obtained through sexual scripts, which are cultural norms that give sexual behaviors meaning as well as staging directions regarding when to engage sexual behaviors, how, why, and with whom. In fact, it is only because sexual activities are embedded within a script that they are possible (Gagnon & Simon, 1973).

According to sexual script theory, sexual scripts operate on three interrelated levels. The first and broadest level is that of the cultural scenario. Cultural scenarios are the larger frameworks and roles through which sex is experienced (Kimmel, 2007). At this level exists the norms and standards that are acquired from institutional sources such as schools, media, religion, and family (Dworkin & O'Sullivan, 2007). The interpersonal level entails routine patterns of interaction that guide behavior in specific situations (Kimmel, 2007). Essentially, individuals improvise on the aforementioned cultural scenarios within a social interaction and there is a negotiation of needs, wants, and desires between the two people (Dworkin & O'Sullivan, 2007). At the interpersonal level, individuals may select from a large class of behaviors that are mutually accessible through the cultural scenario, such as routinized language, conventional styles of communicating sexual willingness, and the culturally agreed on sequence of petting behaviors (Gagnon & Simon, 1973). Lastly, the most unique conceptualization of the sexual self can be found at the intrapsychic level, which involves mental rehearsals of sexual scenarios that draw of fantasies, memories, arousal, and preferred behaviors (Plante, 2007). The intrapsychic level can be perceived as an ongoing dialogue within the individual regarding internalized cultural expectations (Kimmel, 2007). Gagnon and Simon (1973) noted that the same behaviors may have different personal meanings for other pairs of actors and even for the individuals engaged in the same act.

In *Sexual Conduct*, Gagnon and Simon (1973) identified the existence and multiple elements of a traditional sexual script. Related to negative reactions and secrecy of adults concerning sexual matters, one aspect of the sexual script is that the sexual is private. According to Gagnon and Simon (1973) the sexual flourishes best in a separate and sheltered universe that is devoid of all but the most relevant aspects of an individual's identity. Another aspect of the traditional sexual script is that it is according to Laws and Schwartz (1977) "emphatically heterosexual" (p.39). While the doing of homosexual behaviors was discussed in sexual script theory, the dominant sexual and romantic script in America is the interaction between a man and a woman (Dworkin & O'Sullivan, 2007; Gagnon & Simon, 1973). A third attribute of the traditional sexual script is the expectation of monogamy and orientation towards marriage. Sexual script theory is comprehensive in the sense that it describes the development of the sexual self and conduct beginning at birth and extending into adulthood. There is a script for each stage of the life cycle and moreover, the sequence of stages is scripted and the transitions between stages are scripted (Laws & Schwartz, 1977). The cultural script for adolescents and young adults in the United States concerns dating behaviors and transition to marriage.

Since 1973, another sexual script, referred to as *permissiveness with affection*, has been identified. This script can be considered to be the script for the premarital sexual behavior that is regularly practiced by adolescents today. The permissive script is similar to the traditional script in its emphasis on love and monogamy but differs in its view of women's sexuality and treatment of marriage (Laws & Schwartz, 1977). The sexual behaviors predominantly examined in the contemporary literature can be theoretically interpreted as products of scripts. For example, contraceptive use results from interpersonal scripts whereas age at sexual debut and number of sexual partners are outcomes of intrapsychic scripts. The existence of culturally shared scripts

for sexual behavior is supported by evidence of adolescent sexual timetables, which are age-related norms for engaging in sexual behaviors (Gagnon & Simon, 1973; Rosenthal & Smith, 1997).   High agreement in expectations between men and women about sexual behaviors and their sequence also support the presence of culturally shared scripts (Bartoli & Clark, 2006; Krahé, Bieneck, & Scheinberger-Olwig, 2007; Rosenthal & Smith, 1997).

Parents as First Source of Sexual Scripts

In early childhood, parents play a key role in gender role socialization, upon which sexual roles are overlaid. It is parent reactions to child behaviors that appear sexual that first give insight to the child about what the sexual means. As children get older, they continue to gather clues about what transpires in romantic and sexual relationships by observing their parents and internalizing messages received in interactions with their parents. A sexual identity is developed when all of these pieces are assembled into a finished puzzle that will serve as a lens for past, present, and future situations (Jackson, 2007). Because parents theoretically play such a formative role in adolescent development of sexual scripts, it is important to empirically examine parent scripts and other parent-level variables, such as education, in relation to adolescent scripts.

Existing empirical evidence supports the importance of parents in the development of sexual scripts. The family is the strongest direct socializing agent responsible for teaching youth the language, symbols and behaviors that are enacted in romantic relationships (Murry, Hurt, Kogan, & Luo, 2006). These researchers found that the personal relationship histories of mothers influenced the messages that mothers conveyed to their adolescents. These messages then guided the adolescents' own relationship formation. Landor, Simons, Simons, Brody, and Gibbons (2010) used data from the Family and Community Health Study to examine adolescent risky sexual behavior and concluded that even though adolescents are influenced by peers and

media, parents are still important agents of socialization. Using data from parent-child dyads in Add Health, Fingerson (2005) found clear evidence that adolescents use mothers as a reference group, indicating that the family setting is indeed one of sexual socialization. The following subsections examine evidence on four possible mechanisms through which parents may influence their children: basic parent/family characteristics (e.g., family structure, educational background, and religiosity), parent attitudes towards adolescent sexuality, the direct verbal communication of sexual values, and the quality of relationship between parent and adolescent.

Parent and family characteristics.

Previous literature has shown that various characteristics of parents influence adolescent sexual behaviors such as sexual debut and contraceptive use. Mothers who debut early tend to have children who also have first sexual intercourse earlier than their peers (Kowaleski-Jones & Mott, 1998; Mott, Fondell, Hu, Kowaleski-Jones, & Menaghan, 1996). In a study of three generations, the age at which female adolescents initiated sexual intercourse was associated with the age at which their mothers and grandmothers first gave birth and whether their mothers and grandmothers lived with the biological fathers of their offspring (Johnson & Tyler, 2007). Similar to the findings of Johnson and Tyler (2007) regarding family structure, Laflin, Wang and Barry (2008) found that girls who lived with both biological parents were three times more likely to remain virgins than those who did not. In a review of 35 longitudinal studies, Zimmer-Gembeck and Helfand (2008) found that of the family variables examined, family structure was most consistently associated with age of sexual debut, with those living in intact families typically debuting later than those in single or blended families. Cavanagh, Crissey, and Raley (2008) found that family structure and familial structural instability predict likelihood of adolescent involvement in romantic relationships as well as number of romantic relationships in

the previous year. Recently, Kan, Cheng, Landale, and McHale (2010) examined changes in number of sexual partners in the previous year using Add Health data and found that adolescents who lived in stepfamilies or other family structures had more sexual partners than those who lived with both biological parents or with single parents, but this finding was restricted to white youth. Parent age at debut and family structure are both outcomes reflective of parent intrapsychic scripts.

Parent education has been associated with adolescent sexual behavior in several studies. Paternal education is a significant predictor of consistent condom use (Hutchinson, 2002). Maternal education is positively associated with adolescent sexual abstinence (Siebenbruner, Zimmer-Gembeck, & Egeland, 2007) and contraceptive self-efficacy (Longmore, Manning, Giordano, & Rudolph, 2003) while negatively associated with risk of acquiring a sexually transmitted disease (Upchurch, Mason, Kusunoki, & Kriechbaum, 2004). Parent education is also associated with lower probability of sexual debut (Collins et al., 2004). A study of 408 parent-child dyads by Rose and colleagues (2005) revealed that among early adolescents, those whose parents received 12th grade education or less were at least 5.7 times more likely to have sexually debuted than those whose parents received some college education. A formal comparison across studies revealed that parent education has a small positive effect on age at sexual debut but this association appears to be found mainly among white women (Zimmer-Gembeck & Helfand, 2008). In contrast, Kan and colleagues (2010) found that maternal education was positively related to number of sexual partners in the previous year and this effect was similar for white and Mexican American youth.

Like the family, religion is an institution that functions to socialize members of society and serves as a source of cultural scenarios. Parents with high religiosity may influence

adolescent behavior through adolescent internalization of more traditional parent values and through adolescent involvement in religious activities wherein those parent values are reinforced. Religious involvement may influence sexual behavior by providing alternative interpretations of adolescence and life goals as well as by providing activities that facilitate abstention from sex (Maticka-Tyndale et al., 2005). Though prospective research examining family religiosity and adolescent sexual behavior is limited (Manlove, Logan, Moore, & Ikramullah, 2008), previous research that examined the effect of adolescent religiosity has shown consistent evidence of a negative relationship between religiosity and sexual behavior. In a review of longitudinal studies published between 1980 and 2001, Rostosky, Wilcox, Wright, and Randall (2004) found that adolescent religiosity delays the sexual debut of women but findings were mixed for men, while Lammers, Ireland, Resnick, and Blum (2000) found that higher adolescent religiosity was associated with delayed onset of sexual activity for both genders. Sinha, Cnaan and Gelles (2007) found that adolescent attendance to worship services and participation in youth groups were negatively correlated with adolescents having had sex but self-reported importance of religion was positively correlated with sexual activity. Data from the National Longitudinal Survey of Youth revealed a positive association between parent religious attendance and family religious activities and time to adolescent sexual debut (Manlove, Franzetta, Ryan, & Moore, 2006) as well as an indirect association between family religiosity and adolescent number of sexual partners (Manlove et al., 2008). Family religiosity appears to influence adolescent sexual behavior through increased family cohesion and more positive peer networks (Manlove et al., 2008) and reduced frequency of conversations about sex (Regnerus, 2005).

Parent attitudes towards adolescent sexuality.

There is also empirical evidence suggesting a relationship between the content of parent intrapsychic scripts and adolescent sexual behavior. Longmore, Eng, Giordano, and Manning (2009) found that adolescents whose parents believed they should be over the age of 18 when they first have sex had lower odds of having had sex. Zimmer-Gembeck and Helfand (2008) found that parent communication of disapproval of adolescent sexual activity was associated with a delay in sexual debut until at least age 16. A study of American Indian adolescents revealed that adolescents were more likely to consistently use birth control if they perceived parental support (Chewning et al., 2001). This finding replicated that of Jaccard and Dittus (2000), who also found that perceptions of maternal approval of birth control were associated with increased likelihood of adolescents engaging in sexual intercourse and in use of birth control. Previous research using Add Health data has found that perceptions of permissive maternal attitudes predict adolescents having more sexual partners (Fingerson, 2005; Kan et al., 2010).

Direct communication about sexual values.

Direct communication is an important means for parents to communicate their sexual values to their adolescents. Adolescents who report low levels of sexual communication are more likely to underestimate how much their parents disapprove of adolescent sexual activity (Jaccard, Dittus, & Gordon, 1998), that is they are more likely to misinterpret the cultural scenarios non-verbally provided by their parents. In sexual discussions, some parents may focus on preventing or reducing risk of pregnancy or STDS whereas others may focus on providing more general information about sex. Parent-adolescent communication about sex-related risks has been the focus of much research though the findings have been mixed (Lefkowitz & Stoppa, 2006). The findings of these studies are inconclusive partly because few examine the timing of

the discussion. Clawson and Reese-Weber (2003) are among those few and they found that on-time sexual communication, that is discussions that occur prior to sexual intercourse, were associated with later sexual debut and fewer sexual partners. More studies need to distinguish between on-time sexual communication and late communication or restrict their baseline samples to virgins so that the direction of causality in the relationship between parent-adolescent sexual communication and adolescent sexual behavior can be clearer.

Parent-adolescent relationship quality.

Previous research suggests that parent values are more likely to be internalized by adolescents when the parent-adolescent relationship is of good quality (Taris, Semin, & Bok, 1998). Deptula, Henry, and Schoeny (2010) found that parent-adolescent relationship quality was negatively associated with sexual debut, unprotected sexual intercourse, and incidence of sexually transmitted infections. Moreover, in the study by Manlove and colleagues (2008), family cohesion mediated the relationship between family religiosity and adolescent number of sexual partners. Fingerson (2005) found a positive relationship between mother-adolescent connection and likelihood that the adolescent is a virgin as well as a negative relationship between connectedness and adolescent number of sexual partners.

Influence of Individual Adolescent Characteristics on Sexual Trajectories

In addition to exploring parent values and socialization practices, this study also controlled for adolescent demographic characteristics and evidence of adolescent intrapsychic scripts that have been empirically shown to influence other sexual behavior including gender, race and ethnicity, physical maturity, marriage history, virginity pledge history, and motivations for sexual activity.

Given that sexual identity is based upon gender identity, one can expect to see sexual aspects of the traditional script that are extensions of gender role expectations. One example is that men are constructed as being active and are expected to initiate sexual interactions whereas women are seen as reactive and are expected to restrict sexual interactions (Dworkin & O'Sullivan, 2007; Gagnon & Simon, 1973). Another example of gendered sexual behavior is the infamous double standard. As part of the double standard, unmarried men are permitted an active sex life while it is forbidden for unmarried female (Laws & Schwartz, 1977). As a result of the *permissiveness with affection* script, contemporary femininity is said to now include assertiveness in sexual initiation and pleasure-seeking, and contemporary masculinity is said to now include emotionality, commitment, and love (Dworkin & O'Sullivan, 2007). Despite this shift in the sexual script, it is important to note that the double standard has not disappeared altogether; rather, contemporary women must avoid both being not sexual enough and being too sexual (Jackson, 2007). Furthermore, many heterosexual relationships in America and other Western countries continue to be characterized by aspects of the traditional script (Dworkin & O'Sullivan, 2007). Based on these theoretically proposed differences in scripts for men and women, one would expect to see gender differences in sexual behaviors. Several studies have shown that men tend to engage in riskier sexual behaviors than women. Women are more likely to debut later (Johnson & Tyler, 2007; O'Donnell, Myint-U, O'Donnell, & Stueve, 2003; Zimmer-Gembeck & Helfand, 2008) and have fewer partners (Eaton, Kann, & Kinchen, 2006; Fergus, Zimmerman, & Caldwell, 2007; Halpern, Kaestle, Guo, & Hallfors, 2007; c.f. Fingerson, 2005).

Previous research has consistently shown race and ethnic differences in adolescent sexual behaviors. Hispanic and Black youth tend to have earlier debuts (Eaton et al., 2006; Johnson &

Tyler, 2007; Longmore et al., 2009, c.f. Zimmer-Gembeck & Helfand, 2008) and more sexual

partners (Eaton et al., 2006; Fergus et al., 2007; Fingerson, 2005; Santelli et al., 1998) than

White youth. Asian youth tend to have later debuts (Bearman & Brückner, 2001; Fingerson,

2005; Kuo & Lawrence, 2006) and fewer sexual partners than White youth (Halpern et al., 2007,

Kuo & Lawrence, 2006). Theoretically these ethnic and racial differences may be due to

exposure to discrepant and competing cultural scenarios (Brown et al., 2006; Harding, 2007;

Stephens & Phillips, 2005) or possibly to differences in institutional and environmental

constraints on enactment of sexual scripts (Stephens & Phillips, 2005).

　　Pubertal timing is one of the few biological characteristics of the adolescent that has been

shown to influence sexual behavior, but the evidence is inconsistent (Zimmer-Gembeck &

Helfand, 2008). Cavanagh (2004) examined the intersection of race and pubertal timing on

sexual debut and found that for some women, early pubertal timing was associated with earlier

sexual debut. Meschke, Zweig and Barber (2000) found that later pubertal timing delayed both

boys' and girls' sexual debuts, however this effect disappeared once social predictors were added

into the models. This finding replicated the finding of Mott and colleagues (1996) that age at

menarche did not predict age at debut. Flannery, Rowe, & Gulley (1993) found that both men

and women who matured earlier than their peers had significantly higher sexual experience

scores. Halpern and colleagues (1993) found that changes in pubertal development significantly

predicted increases in thoughts about sex, engagement in non-coital sexual behaviors, and

transition to sexual intercourse. While sexual script theory posits that sexual behaviors and

values are learned, Gagnon and Simon did acknowledge the interaction between biology and

society that occurs in adolescence. Namely, it is due to physical cues of maturation that society

recognizes adolescents as reproductively viable and therefore sexual beings (Gagnon & Simon,

1973). From this perspective, adolescents who mature earlier than their peers may be treated as sexual adults begin to engage in sexual activities before they are fully mentally and emotionally developed.

Being married has been shown to reduce the odds of female adolescents having had two or more sexual partners (Santelli et al., 1998). While literature on the effects of marriage history on number of partners was limited, the importance of monogamy in the traditional sexual script lead me to expect that those who marry before their peers stop acquiring partners at the point of marriage and therefore may have a lower lifetime number of partners.

The previous findings on the influence of taking a virginity pledge are mixed. Some studies have found that adolescents who pledge debut later (Bearman & Brückner, 2001; Brückner & Bearman, 2005), marry earlier and have fewer lifetime partners than those who do not (Brückner & Bearman, 2005). However, there is evidence that many adolescents who pledge to remain virgins go on to debut and later retract their pledges (Hollander, 2006). In a study using Add Health, Rosenbaum (2009) found that over 80% of those who pledged claimed to have never pledged five years after pledging. She also found that adolescents who took virginity pledges did not differ from closely matched non-pledgers in number of lifetime partners or in age of debut (Rosenbaum, 2009).

Adolescent motivations to have sex have also been found to influence sexual behavior. Like parent attitudes about adolescent sexual activity, this variable is an example of a direct measure of intrapsychic script content. Expecting more positive consequences to sex has been associated with earlier debut (O'Donnell et al., 2003), propensity for casual sex (Levinson, Jaccard & Beamer, 1995) and higher number of sexual partners (Kan et al., 2010). Fingerson (2005) found that adolescents who believed sex would be physically pleasurable and included it

as activity that would occur in an ideal romantic relationship were more likely than those who did not to have had sex. In a review of the literature, Buhi and Goodson (2007) found motivation to have sex to be the most stable predictor of sexual intercourse, participation in sexual behaviors, and greater risk.

Contributions to the Literature

The purpose of this study was to examine parental influences on the growth or increase in life-time number of sexual partners, from adolescence through young adulthood. This study contributes to the literature in multiple ways. First, it examines an outcome that is less frequently studied. The majority of reviewed research on adolescent and young adult sexual behavior examined age at debut and contraceptive use. While condom use is imperative for preventing or reducing transmission of sexual diseases, it is typically low among adolescents and young adults (Mosher & Jones, 2010), particularly in romantic relationships with regular or steady partners (Anderson, Wilson, Doll, Jones, & Barker, 1999; Sheeran, Abraham, & Orbell, 1999). As adolescents and young adults often engage in serial monogamy (Netting & Burnett, 2004), lifetime number of sexual partners becomes an important factor in risk for disease. Almost all of the studies that did examine number of sexual partners measured the number of sexual partners in the recent past, typically the preceding 12 months (Cavanagh et al., 2008; Fergus et al., 2007; Halpern et al., 2007; Kan et al., 2010; Manlove et al., 2008; Rosenbaum, 2009; Santelli et al., 1998). While having concurrent sexual partners or multiple sexual partners within a year is a high risk behavior, this measure does not capture the risk of having had one or more sexual partners prior to the preceding year.

Second, it extends previous research on lifetime number of sexual partners that is typically cross-sectional in nature (Clawson & Reese-Weber, 2003; Eaton et al., 2006;

Fingerson, 2005; Kuo & Lawrence, 2006; Santelli et al., 1998) by using longitudinal data, which facilitates inferences regarding causality. Lastly, measuring lifetime number of sexual partners at multiple time points and employing growth curve analyses allows me to observe change in this outcome variable with age and account for the nested nature of the data. Studies of this nature are lacking in the literature.

Method

To answer the research question, I used data from all four waves of the National Longitudinal Study of Adolescent Health (Add Health). Add Health is a study of a nationally representative cohort of adolescents who were in grades 7 - 12 in 1994 and 1995. A stratified clustered sampling design was used, selecting from 80 pairs of high schools and their feeder schools. At baseline data was collected from 90, 118 students using an in-school questionnaire. Data was also collected from 20,745 randomly sampled students and their family members using computer-assisted personal interviews at home. The following year, 14,738 of those students and their family members completed a second computer-assisted in-home interview. In Wave III (2001 – 2002), data was collected from 15,197 Wave I participants and 1,507 of their romantic partners using in-home computer-assisted personal interviews. During the most recent wave (2007-2008), data was collected from 15,701 Wave I participants using in-home computer-assisted personal interviews.

Sample

There were four sampling criteria for this study. First, respondents needed to have participated in all four waves and have a valid sampling weight, which yielded a sample size of 9,421. Second, the respondents needed to be at least 15 years of age to answer key questions for this study. Third, the respondents needed to have a residential mother or father who completed the In-Home parent questionnaire at Wave I, as five predictors for this study are derived from this section. These two criteria reduced the sample size to 8,407. Lastly, the sample was restricted to those who were virgins at Wave I, which further reduced the sample size to 2,880.

Measures

Outcome variable.

The outcome variable for this study is respondent-reported lifetime number of sexual partners at each wave. In Wave I, the respondent was asked to report on up to three romantic relationships that occurred in the previous 18 months. For each listed relationship, the respondent was given a one if he or she reported having sex with that partner. Then the respondent was asked if he or she had any sexual partners outside of the previously reported romantic relationships. If the respondent answered yes, then he or she was asked to report his or her total number of sexual partners. This number was used as the total number for Wave I. If the respondent reported that he or she had not had any sexual partners outside of the previously reported romantic relationships, then the respondent's sum score from the romantic relationship history was used as the total number for Wave I. For Wave II, the same format was used but the respondent was asked their total number of sexual partners since Wave I. The respondent's total number of sexual partners was calculated by summing the report from Wave II and their previous total from Wave I. For Waves III and IV, the respondent was asked, "With how many partners have you ever had vaginal intercourse?" The response to this item was used as the total number of partners for these waves. For all four waves, if the respondent reported never having had sexual intercourse and did not later report having sex within relationship histories, he or she was coded as having zero partners (See Table 1).

Level-1 predictors.

Respondent age.

Because this study uses growth modeling and examines change in number of sexual partners over time, age of the respondent is the primary predictor in the unconditional model. Preliminary analyses suggested a curvilinear relationship between age and the outcome variable, so a quadratic term of age was included as a predictor. By including this polynomial term, I

allowed the model to accommodate curvilinear trajectories in which the slope may accelerate or decelerate over time. I centered age in order to make the estimates for the intercept more meaningful, as it makes little sense to predict the number of sexual partners for a person at age zero. I chose to center age around 23 so that the intercept could be interpreted as a person's expected number of sexual partners at the midpoint of the study. Centering at the midpoint of the study is preferable because the slope can be interpreted not only as the rate of change at the midpoint but also as the average rate for the period of observation. It also stabilizes the estimation procedure by minimizing the correlation between age and its squared term (Raudenbush & Bryk, 2002).

Level-2 predictors.

To examine possible influence of parents on the sexual behavior of their children as they enter young adulthood, I examined seven parent variables. In addition to these parent variables, I also examined the influence of six other characteristics of the adolescent as control variables, including gender, race/ethnicity, physical maturity, marriage history, virginity pledge history, and motivations.

Family structure.

Although a direct measure of parent lifetime number of sexual partners is not available in the data, the family structure does reflect to some extent parents' histories with long-term committed relationships. Therefore, family structure was measured using information from the Wave I adolescent-reported household roster to create a five category variable reflecting the marriage and cohabiting status of the parents. The first category contains those who reported living with either both biological parents or two adoptive parents. The second category contains those who reported living with one biological parent and his or her spouse. The third category

contains those who reported living with one biological parent and his or her cohabiting partner. The fourth category contains those who reported living with a single biological parent. Those who did not fall within the above four categories were relegated to the fifth category. Indicator variables were created for four of the categories using intact families as the referent group.

Parent education.

Two items were used to measure parent education. The respondent of the parent In-Home interview was asked how far in school he or she went. The respondent was then asked this same question about his or her partner. Two indicator variables were created from these items such that if the respondent or partner went to college or received postgraduate education then he or she received a one. Otherwise he or she received a zero. Parent education was created by taking the highest score of these two indicator variables.

Parent religiosity.

Parent religiosity was created by using three items from the Wave I parent In-Home interview ($\alpha = 0.84$). The first item is of organizational religiosity and regards the frequency with which the parent attended religious services in the previous year. The second item measures personal religiosity and asks the parent how important religion is to him or her. The last item regards the frequency with which the parent prays. The responses to these items were reverse coded to range from (1) 'never' or 'not important at all,' to (4) 'once a week or more' or 'very important.' The value for parent religiosity was derived by averaging these three scores. Using these three items more accurately captures the multifaceted nature of religiosity than using religious service attendance alone (Landor et al., 2010).

Parent-adolescent sexual communication.

Two variables in this study measured parent-adolescent communication about sex. Parent communication about the negative consequences of sex was measured using four items from the Wave I parent In-Home interview ($\alpha = 0.88$). These items asked the parents to report the frequency of their communication with their adolescents regarding the following four subject areas: (a) the bad things that would happen if the adolescent had sex, (b) the dangers of getting a sexually transmitted disease, (c) the adolescent's loss of respect from others, and (d) the moral issues of not having sexual intercourse. Responses for each of these items ranged from (0) 'not at all,' to (4) 'a great deal' (See Table 1). Parent communication about sexual topics in general was measured using two items from the Wave I parent In-Home interview ($\alpha = 0.85$) that asked parents to report the frequency of their communication with the adolescents regarding sex and regarding birth control. Responses for these two items ranged from (0) 'not at all,' to (4) 'a great deal' (See Table 1). Because all participants in the sample were virgins at Wave I, the communication examined in this study is considered "on-time."

Parent disapproval of adolescent sexual activity.

In addition to parent reported communication about sexual topics and parent relationship status, I included an adolescent-reported measure of parent disapproval of adolescent engagement in sexual intercourse. Adolescent report was used because there is evidence in past research which suggests that adolescent perception of parent attitudes is more predictive of adolescent sexual behavior than parent-reports of their own attitudes (Jaccard et al., 1998). This variable was created using four items. The first item asked the adolescents how their mothers would feel about them having sex at this time in their lives. The second item asked the adolescents how their mothers would feel about them having sex with a special someone, such as a steady boyfriend or girlfriend. The responses to these items were reverse coded to range from

(1) 'strongly disapprove,' to (5) 'strongly approve.' The third and fourth items asked the

adolescents the same two questions about their fathers. These two items were coded in the same

way to range from (1) 'strongly disapprove,' to (5) 'strongly approve.' The parent disapproval

variable was created such that if the respondent to the parent In-Home interview was female then

an average of the two mother-oriented items was used ($\alpha = 0.92$). If the respondent to the parent

In-Home interview was male then an average of the two father-oriented items would be used (α

$= 0.98$). This coding was used so that data from the parent In-Home interview respondent and

from the adolescent would pertain to the same parent. See Table 1 for descriptive statistics

regarding these variables.

Parent-adolescent connectedness.

A measure of parent- adolescent relationship quality was created from four items in the

Wave I parent In-Home interview ($\alpha = 0.71$). During the interview, the parent was asked how

often it would be true for him or her to make the following three statements about his or her

adolescent: (a) "You get along well with him/her," (b) "He/she and you make decisions about

his/her life together," and (c) "You feel you can really trust him/her." The responses to these

three items were reverse coded to range from (1) 'never,' to (5) 'always.' The fourth item asked

the parent how much he or she agreed with the statement: "Overall, you are satisfied with your

relationship with [name of adolescent]." The responses to this item were reverse coded to range

from (1) 'strongly disagree,' to (5) 'strongly agree.' The parent-adolescent connectedness

variable was then created by averaging these four items.

Adolescent biological sex.

The biological sex of the adolescent was modeled using an indicator variable for whether the adolescent was female. If the respondent is identified as female, then she received a one; if the respondent is identified as male, then he received a zero.

Adolescent race/ethnicity.

Adolescent race and ethnicity was created using three items from Wave I and prioritizing ethnicity. Adolescents who reported being of Hispanic or Latino origin were identified as Hispanic. Race was created using two variables such that adolescents who reported only one race were identified as members of that race and adolescents who reported more than one race were identified as members of the race they selected as best describing their racial backgrounds. Ethnicity and race were combined to create five categories: Hispanic, White Non-Hispanic, Black Non-Hispanic, Asian Non-Hispanic, and Other Non-Hispanic. Indicator variables were then created for each of these categories, using White Non-Hispanic as the reference group because it was the largest proportion of the sample.

Adolescent physical maturity.

Adolescent pubertal timing was measured using an interviewer-rating of the adolescent's physical maturity compared to other adolescents of the same age at Wave I. The original responses ranged from (1) 'Very immature,' to (5) 'Very mature.' These responses were collapsed to create an indicator item of whether the interviewer rated the adolescence as physically 'Mature' or 'Very mature' compared to their age peers.

Marriage history.

At Wave IV, the respondent is asked, "How many times have you been married?" This item was used to create an indicator variable such that if the respondent had been married at least once or was currently married, then he or she received a one.

Virginity pledge history.

In Waves I through III the respondent was asked if he or she ever signed a pledge to remain a virgin until marriage. If the respondent answered 'Yes' at any wave, then he or she received a one for this variable. Previous research has shown that adolescents sometimes retract their virginity pledge if they have sex before marriage (Hollander, 2006). Creating this variable thusly preserves information about any pledging that might have occurred during the years of the study.

Adolescent perceptions of positive consequences of sexual intercourse.

This variable was created by averaging responses to five Wave I Likert items indicating level of agreement with several statements ($\alpha = 0.81$). The first statement suggests that the respondent's friends would respect him or her more if he or she were to have sexual intercourse. The second statement suggests that the respondent would feel a great deal of pleasure if he or she were to have sexual intercourse. The third statement suggests that the respondent would feel more relaxed if he or she were to have sexual intercourse. The fourth statement suggests that the respondent would be more attractive to women or men if he or she were to have sexual intercourse. The last statement suggests that the respondent would feel less lonely if he or she were to have sex. The response choices to these items ranged from (1) 'Strongly agree,' to (5) 'Strongly disagree.' Consequently, the items were all reverse coded such that higher values reflect more positive perceptions of social consequences of sexual intercourse (See Table 1).

Results

Descriptive Statistics

This sample was composed of 2,880 individuals who were observed over four time points, for approximately 13 years. The respondents ranged in age from 15 to 18 at Wave I, 16 – 19 at Wave II, 24 – 25 at Wave III, and 28 – 31 at Wave IV. A majority of the sample reported living with two biological or adopted parents (66%) with the next largest proportion of the sample living with a single biological parent (18%). Thirteen percent of the participants reported living in blended families, 10% with parents who were married and only three percent with parents who were cohabiting. Another three percent reported living in a family structure that differed from those discussed above. The majority (57%) of the sample had at least one college-educated parent. The participants were 55% female, 17% Hispanic, 61% White Non-Hispanic, 14% Black Non-Hispanic, 6 % Asian Non-Hispanic and 2% reporting a different race. Forty percent of the respondents were rated by the interviewer as physically "mature" or "very mature" compared to similar-aged peers. A majority of the sample (54%) had married at least once by Wave IV while only 29% of the sample reported ever making a virginity pledge. The means, standard deviations and ranges of number of sexual partners and the continuous predictors can be seen in Table 1.

Analyses

To examine individual change in number of sexual partners over time and identify predictors of this change, I employed a growth curve model using version 6.331 of HLM statistical software. A growth curve model is a hierarchical model wherein observations of each individual are nested within each person, thereby adequately capturing the true nature of the data. This method of modeling also circumvents the issue of differences in the number and spacing of observations between individuals which is problematic for the alternative modeling techniques of

structural equation modeling and multivariate repeated-measures modeling (Raudenbush & Bryk, 2002). This growth curve model had two levels of analysis. At level 1 there were 11,520 observations that yielded individual trajectories with unique intercepts, slopes, and rates of acceleration. At level 2 there were 2, 880 individuals. At level 2, the characteristics of the individual trajectories at level 1 were predicted by the person-level characteristics of this study (e.g., parent and adolescent variables), essentially allowing us to see variation in growth trajectories across the individuals in the sample.

Number of sexual partners is a count variable. Because count variables always have a lower bound at zero and are often skewed, they typically do not have a normal distribution (Hox, 2010) and so violate assumptions of normality in standard regression. Preliminary analyses confirmed that lifetime number of sexual partners was indeed positively skewed. Instead of transforming the outcome variable, which can complicate interpretation of the results, I used a poisson error distribution with a log link function. The poisson error distribution models the probability of the number of events (e.g., event of acquiring new partner) occurring in a fixed period of time. The log link function allows the magnitude of variance of each measurement to be a function of its predicted value. Because all of the participants in the study sample were followed for the same length of time, I used a constant-exposure model (Hox, 2010). Taking the exponents of the coefficients of the level-2 predictors yields event rate ratios. An event rate ratio represents the factor by which the number of sexual partners will increase or decrease with a one unit increase in a predictor while holding the other predictors in the model constant. For ease of interpretation, one may be subtracted from the event rate ratio to give the effect size of the predictor in terms of percent change.

In the first step, I specified the unconditional model by entering age and the square of age as level 1 predictors of number of sexual partners. The intercept and age variables were allowed to randomly vary. The fixed effects for age and its squared term were both significant, suggesting that a quadratic model is a better fit than a linear model for the trajectories. After specification of the unconditional model, I entered each level-2 predictor individually. After observing the significance of the variables on their own, I entered the parent variables and adolescent demographic variables into level-2 of the model. Then, I removed non-significant covariates individually beginning at the quadratic term. Next I entered the adolescent predictor variables simultaneously into level-2 of the model. I followed the same aforementioned process to reach a more parsimonious model. This method of entry was used to illuminate any possible mediation of parent variables by adolescent variables, however no evidence for mediation was found. All continuous parent and adolescent variables were centered on their grand means for more convenient interpretation of the coefficients and the growth curve analyses were weighted using the individuals' longitudinal weights.

Specification of Model

The final estimation of level-1 fixed effects revealed significant t-tests for the intercept, age and the squared term of age. These results signify that the sexual trajectories of adolescents and young adults are curvilinear – that is, sexual partners are acquired at increasing rates with age. The random effect for the level-1 intercept was significant, which indicates that there is significant variation in the number of sexual partners between individuals. The effect of age on number of sexual partners differed significantly by person-level characteristics including family structure, parent education level, parent religiosity, parent-adolescent general communication about sex, parent-adolescent connectedness, adolescent race, marriage history, pledge history,

and attitudes about sex. Parent disapproval of adolescent sexual activity was statistically

significant but the odds ratio was equal to one when taken to three decimal points and so it was

dropped from the model. The following is the final specified model:

Level-1 Model
$$E(Y|B) = L$$

$$V(Y|B) = L$$

$$Log[L] = P_0 + P_1(Age) + P_2(Age\ Squared)$$

Level-2 Model
$$P_0 = B_{00} + B_{01}(Parent\ Religiosity) + B_{02}(Parent\ Education) + B_{03}(Connectedness)$$

$$+ B_{04}(Sexual\ Communication) + B_{05}(Blended\ Family,\ married) + B_{06}(Blended$$

$$Family,\ cohabiting) + B_{07}(Single\ Parent) + B_{08}(Other\ Family\ Structure) +$$

$$B_{09}(Hispanic) + B_{010}(Black) + B_{011}(Asian) + B_{012}(Other\ Race) + B_{013}(Pro\text{-}Sex$$

$$Attitudes) + B_{014}(Pledge\ History) + B_{015}(Marriage\ History) + R_0$$

$$P_1 = B_{10} + B_{11}(Parent\ Education) + B_{12}(Hispanic) + B_{13}(Black) + B_{14}(Asian) +$$

$$B_{15}(Other\ Race) + B_{16}(Marriage\ History) + R_1$$

$$P_2 = B_{20} + R_2.$$

Predictors of Variation in Growth Trajectories across Individuals

Table 2 provides the fixed effects of the person-level characteristics on the growth of

number of sexual partners with age and the results expressed in terms of percentages are

presented below.

Parent and family variables.

Family structure.

As shown in Figure 1, family structure was a significant predictor for the mean number of

sexual partners at midpoint. Adolescents who have blended families tended to have more sexual

partners than those who are from intact families. Compared to those who lived in intact families, the event rate ratio for those who lived with a biological parent who was married to a new partner was 1.32 (1.13, 1.56). Presented differently, young adults who lived with step-parents had on average 32% more partners than young adults who lived with two biological or adoptive parents. The event rate ratio for those who lived with a biological parent who was cohabiting with a new partner was 1.34 (1.00, 1.86), representing a mean number of partners that was 34% higher than that of the reference group.

Parent education.

While parent education was not a significant predictor of the intercept, it was a significant predictor of the average linear growth rate, having an event rate ratio of 1.03 (1.02, 1.05). Compared to those whose parents were not college educated, young adults who had at least one parent who attended college had on average 3% more partners per year.

Family religiosity.

Parent religiosity was a significant predictor for the mean number of sexual partners at midpoint, with an event rate ratio of 0.94 (0.88, 0.99). Compared to young adults with parents of average religiosity, those whose parents' religiosity score was one unit higher had on average 6% fewer sexual partners.

Parent-adolescent sexual communication.

Parent-adolescent general communication about sex was a significant predictor of the mean number of sexual partners at midpoint, with an event rate ratio of 1.12 (1.06, 1.18). Compared to young adults with parents who reported an average amount of sexual communication, those whose parent's score was a one unit higher had on average 12% more sexual partners. A graph of this comparison, including the trajectory of estimated number of

sexual partners for those whose parent's score was one unit lower than average, is provided in Figure 2. Parent-adolescent communication about the negative consequences of sex was not significant.

Parent-adolescent connectedness.

The quality of the parent-adolescent relationship was a stronger protective factor at midpoint. The estimated event rate ratio for connectedness was 0.80 (0.73, 0.87), meaning that compared to young adults whose parents reported average connectedness, those whose parents' connectedness score was one unit higher had on average 20% fewer sexual partners. Figure 3 demonstrates this substantive effect.

Adolescent variables.

Demographic characteristics.

Race emerged as a significant predictor of both the mean number of partners at midpoint and the linear growth rate. Compared to white young adults, the event rate ratio of black young adults was 1.41 (1.19, 1.68) and those of Asian young adults was 0.64 (0.48, 0.86). In other words, Black young adults had on average 41% more sexual partners and Asian young adults had on average 36% fewer sexual partners than White young adults at midpoint. Compared to white young adults, Hispanic and Asian young adults had slightly faster rates of growth in average number of partners, with event rate ratios of 1.02(1.00, 1.05) and 1.05 (1.00, 1.10), respectively. This corresponds to two percent more sexual partners per year for Hispanic young adults and five percent more sexual partners per year for Asian young adults compared to white young adults. These racial differences in mean and slope are shown in Figure 4.

While marriage history was not a significant predictor of intercept, it was a significant predictor of the linear growth rate. The event rate ratio for this control variable was 0.96 (0.95,

0.97). Young adults who reported marrying at least once had slightly slower rates of growth, with four percent fewer partners on average per year than those who were single. Physical maturity and gender were not significant.

Other control variables.

Virginity pledge history was a significant predictor of number of sexual partners at midpoint, with an event rate ratio of 0.67(0.60, 0.76). Adolescents and young adults who reported pledging had on average 33% fewer partners than those who did not. Expecting positive consequences from sex (pro-sex attitudes) was a significant predictor of mean number of sexual partners at midpoint. The event rate ratio for this control variable was 1.28 (1.17, 1.33), translating to a 28% higher average number of sexual partners associated with a one unit increase in pro-sex attitude score compared to young adults with average pro-sex attitude scores.

Discussion

The purpose of this study was to examine sexual trajectories of adolescents and determine whether parents have an influence while taking into account characteristics of the adolescents that have been shown to be associated with sexual behavior in previous research. The results revealed that several characteristics of the family and parent-adolescent relationship exert significant long-term influences on young adult sexual behavior. Excluding two variables, each had a significant effect on the outcome variable while controlling for the effects of the other parent variables in the model, which provides strong evidence of a complex process of sexual socialization.

The findings for the effect of family structure extend and partially support the results of previous literature. Adolescents who lived in blended families, especially those whose parents cohabited, had on average more partners in young adulthood than those who lived in intact households. This result is similar to some previous research (Johnson & Tyler, 2007; Laflin et al., 2008) which found that adolescents who did not live with both biological parents were less likely to delay sexual debut. It extends that research by examining sexual behavior beyond debut and by distinguishing between married, cohabiting, and single non-intact families. This result is consistent with the findings of other previous research (Cavanagh et al., 2008; Kan et al., 2010) and extends that research by examining lifetime number of sexual partners instead of number of partners per year and by doing so over a longer time period. Young adults who lived in single-parent families had similar numbers of sexual partners to young adults who lived in intact families, which replicates the finding by Kan and colleagues (2010) but is inconsistent with the finding of Cavanagh and colleagues (2008), who also examined single parent family structures separately from blended family structures. Cavanagh and colleagues (2008) measured the effects

of mothers and fathers separately whereas Kan and colleagues (2010) only examined the effects of mothers and my study included both single mothers and single fathers in one category. It is possible that living with a single father does have a positive influence on number of sexual partners while living with a single mother does not. More research that includes data from fathers is needed to explore possible moderation of the effect of living in a single parent family by gender of the parent. The observed difference between those who lived in blended families and those who lived in single, surrogate, or intact families may be due to parental practice of serial monogamy, which may have altered adolescents' perceptions of the constancy of relationships and thereby shaped their intrapsychic sexual scripts.

Higher levels of parent education were associated with increases in adolescent number of sexual partners. There was no difference in mean number of sexual partners between those whose parents were college educated and those whose parents were not, but a difference was found in the growth rate. This finding is consistent with that of Kan and colleagues (2010) who found that maternal college education was associated with youth having more sexual partners in the previous year. This finding may be due to the delayed sexual debut that has been associated with college educated parents in previous literature (Rose et al., 2005; Zimmer-Gembeck & Helfand, 2008). The effect of parent education on adolescent sexual trajectories may be related to parent and adolescent expectations for adolescent academic achievement. Previous research has suggested that parents with higher levels of education have higher expectations for the education of their children and consequently monitor their adolescents, discourage sexual activity and encourage condom use (Schvaneveldt, Miller, Berry, & Lee, 2001; Upchurch et al., 2004). Though adolescent academic variables were beyond the scope of this study, future

research should examine the effect of parent education expectations on adolescent sexual scripts and the intersection of adolescent values for education and sexual values.

Parent religiosity emerged as a protective factor, which aligns with previous literature that examined the effect of adolescent religiosity on sexual debut (Lammers et al., 2000; Manlove et al., 2006; Rostosky et al., 2004; Sinha et al., 2007) and is consistent with research that examined the effect of family religiosity on number of sexual partners (Manlove et al., 2008). As discussed in the introduction, family religiosity may influence adolescent sexual trajectories by framing sexual behavior as an activity that occurs in marriage as well as by providing opportunities to participate in supervised social activities with peers who share the same cultural scenario (Maticka-Tyndale et al., 2005).

Adolescent perceptions of parent disapproval of adolescent sexual activity were a statistically, but not substantively, significant predictor of adolescent sexual trajectories. This finding is in contrast to the previous research that found a significant positive effect of perception of permissive maternal attitudes on adolescent number of sexual partners in the previous year (Fingerson, 2005; Kan et al., 2010). The reason for this difference is unclear as both of the aforementioned studies employed large samples of Add Health data and controlled for adolescent gender, race, age, family structure, maternal education, pubertal timing, adolescent positive attitudes about sex, and family warmth or connectedness. It is possible that a variable included in this study, such as parent religiosity or parent communication, was a stronger predictor of change in the outcome variable and so was attributed more variance. More exploration is needed to reach a conclusion regarding the effect of parent attitudes about adolescent sexual activity on sexual trajectories.

Higher levels of parent-adolescent sexual communication at Wave I, when participants in the sample were virgins, were associated with increases in young adult number of sexual partners. Though it was expected that examining on-time sexual communication would replicate the findings of Clawson and Reese-Weber (2003), who found that communication that occurred prior to adolescent sexual debut was a protective factor for later adolescent sexual risk, the findings were instead similar to those of other researchers that found that sexual communication was associated with increases in adolescent sexual risk but did not examine whether the communication preceded sexual debut or was in response to sexual activity (Chen & Thompson, 2007; Chewning et al., 2001; Mollborn & Everett, 2010). One interpretation of this finding is that the sexual communication that was examined in this study was "on-time" in regards to sexual intercourse but not "on-time" for non-coital activities. That is, it is possible that the parents in this study were responding to suspected or known adolescent engagement in sexual activities such as kissing or petting. Consequently, future research should measure the timeliness of sexual communication both in relation to intercourse and in relation to non-coital activities. It is also possible that the content and timing of parent-adolescent sexual communication are not as important as the occurrence of communication itself. Mollborn and Everett (2010) found that parent-teen communication about sex increased the odds of the teen subsequently having sex both for virgins and non-virgins. Fingerson (2005) found that as parent-adolescent sexual communication increased, so did the likelihood that the adolescent has had sex regardless of whether the parent was approving or disapproving of adolescent sexual activity – that is, regardless of the presumed content of the communication. From a theoretical standpoint, the occurrence of parent-adolescent discussion about sex may communicate to the adolescent that sexual activity is within the realm of possibility – that is, that society sees him or her as a sexual

being. Subsequently, the adolescent would continue in earnest to assemble his or her sexual

script by incorporating additional feedback from other sources of cultural scenarios such as peers

and media which may offer conflicting messages about the appropriateness or normality of

adolescent sexual behavior.

Satisfaction with the parent-adolescent relationship emerged as a protective factor for

number of sexual partners, which is similar to previous research that found a negative

relationship between parent-adolescent relationship quality and other adolescent sexual

behaviors (Deptula et al., 2010) and is consistent with previous research that found a negative

relationship between parent-adolescent relationship quality and adolescent number of sexual

partners (Fingerson, 2005; Manlove et al., 2008). This research extends the findings of

Fingerson (2005) by examining number of sexual partners longitudinally and extends the

findings of Manlove and colleagues (2008) by examining lifetime number of sexual partners

instead of restricting the analysis to number of sexual partners in the preceding year. As

mentioned earlier in this paper, parent-adolescent relationship quality may influence adolescent

sexual trajectories by facilitating the incorporation of parent values into the adolescent sexual

script (Taris et al., 1998).

In addition to the parent variables, this study controlled for six adolescent demographic

and predictor variables, including gender, race, physical maturity, marriage history, virginity

pledge history, and motivations for sexual activity. The results revealed that young adults who

were Black, unmarried, had not made a virginity pledge and who had more positive than average

sex attitudes later had more partners than those who were of a different race/ethnicity, marital,

and pledge status, and with only average or below average attitudes about sex. The findings for

gender were inconsistent with previous research that has found gender differences in number of

sexual partners (Eaton et al., 2006; Fergus et al., 2007; Halpern et al., 2007; Santelli et al., 1995) and inconsistent with expectations based on SCT. The discrepancy in findings is likely due to methodological differences in operationalization of the outcome variable, age of the sample, and my use of longitudinal rather than cross-sectional data. The results of this study as well as other existing evidence suggest that the previously observed gender differences in number of sexual partners are restricted to early adolescence or may actually be reflecting differences in unmeasured social predictors (Fergus et al., 2007, Fingerson, 2005). The non-significance of gender may serve as evidence that there is no longer a double-standard or perhaps lifetime number of sexual partners simply has less visibility and therefore less stigma in adulthood compared to adolescence. This study contributed to existing knowledge regarding the effect of race/ethnicity on adolescent sexual behavior by examining growth rather than differences in means at one time point. The results of this examination suggest that previously found differences in number of sexual partners between black and white adolescents may be due to age at debut and not rate of partner acquisition. Differences in age at debut and in rate of partner acquisition may be due to the intersections of racial/ethnic scripts and gender scripts or they may be due to environmental constraints on enactment of cultural scripts. For example, high poverty or low perceived availability of romantic partners may shape how people view pregnancy and sexual activity or reduce the probability of finding a partner.

As discussed earlier in this paper, this study contributed to the literature in several ways. First, it examined lifetime number of sexual partners, which has not been examined in extant literature as frequently as sexual debut and number of sexual partners in the preceding year. Second, it employed longitudinal data allowing the temporal nature of potential causal relationships to be observed. Third, it measured lifetime number of sexual partners at multiple

time points and employed growth curve modeling, which allowed change and differences in rates of change to be observed. Additionally, the inclusion of both single parent and cohabiting blended family categories in the family structure variable revealed nuances in the effect of different parent intrapsychic scripts on number of young adult sexual partners. This operationalizaton has been employed in only one other study (Cavanagh et al., 2008). This study also included measures of "on-time" parent-adolescent sexual communication as a means to replicate the finding of Clawson and Reese-Weber (2003). The results revealed that timing of discussion does not have an effect on lifetime number of sexual partners in a larger, more representative sample.

Limitations

It is important to mention several limitations of this study. First, the sample used for this study may not be representative of the entire Add Health sample or generalizable to other samples. More specifically, the restriction of the data to those who were virgins at Wave I may have slightly biased the sample toward late debuters. Consequently, the estimated means and slopes of the trajectories of lifetime numbers of sexual partners may be higher for adolescents who had debuted early or on—time at Wave I. Similarly, only vaginal intercourse partners were measured in this study and so the results may not generalize to youth who engage in sexual activities with someone of the same gender. Sexual orientation was not included as a control, and so it is possible that non-heterosexual youth in the sample may have been mislabeled as having a low number of partners or as virgins. Given that sexual behaviors that do not involve vaginal penetration still involve risk of acquiring a sexually transmitted disease, future research should use a more inclusive definition. Second, these results are based on self-reported data. The variable of interest, lifetime number of sexual partners, may have been under- or over-

reported by adolescents who were confused about the wording of the question, not sure of how many partners they had had, wishing to appear socially desirable, or were intentionally mischievous (Fan et al., 2006). While questions regarding sexuality were computer assisted and answered individually at home, which reduces the likelihood of social desirability issues, number of sexual partners is still a sensitive question and one that might attract the attention of "jokesters". However, the sample size likely reduced any bias caused by inaccurate reporters (Fan et al., 2006) and self-report is simply unavoidable when studying some sexual behaviors due to practical and ethical limitations (Fergus et al., 2007). Third, the parent predictors were measured only at baseline, though they likely could have changed or had varying influences on the trajectories over time that were unmeasured. For example, parents originally identified as having an intact family structure may have subsequently divorced or those identified as being single parents may have subsequently cohabited or remarried. In these scenarios, the effects of living in a given family structure category could be under- or over-estimated. Longitudinal data on parents would not only capture natural changes in parent predictors but might also facilitate the testing of whether adolescent behavior shapes parent values. Fourth, this study did not include any measures of exposure to other sources of cultural scripts, such as media, peers, and older siblings. As a result, the influence of parents on young adult enactment of sexual scripts cannot be compared in magnitude to other known influences on sexual behavior. Lastly, there were limitations in measurement of some of the constructs. For example, a comparable and more direct measure of parent intrapsychic scripts would be assessment of parent lifetime number of sexual partners but this item was not available. The items used to assess parent-adolescent general communication about sex captured frequency but did not capture specific content or tone. Future research should include more items that measure these characteristics or

perhaps delve more deeply using qualitative approaches in order to further explore the negative relationship between parent-adolescent sexual communication and young adult lifetime number of sexual partners. The significance of physical maturity may have been influenced by the nature of the measure as an interviewer rating and indicator variable. Future research should include more objective items that are answered by self-report or by a physician.

Implications for Future Research, Practice and Theory

The results of this study suggest that parents are important agents of sexual socialization who influence young adult sexual behavior through family processes that take place during adolescence. More research is needed to further explore the mechanisms of transmission of parent sexual scripts to adolescents. For example, while it is clear that living in blended families is associated with having more sexual partners in young adulthood, it is not immediately evident whether this effect is due to perception of serial monogamy as normative or due to deficiencies in relationship skills. Possible variables to be included in future research that may further illuminate the findings in this study include age at sexual debut, age at marriage, perceptions of romance, conflict resolution skills, and adolescent education expectations or attainment as potential mediators. Also, while this study has examined some components of the adolescent sexual script (motivations to have sex), future research should further examine the content of adolescent intrapscyhic scripts, such as by examining the ideal relationship items in Add Health or by using qualitative methods such as interviews or vignettes. Both analyses of mediation and examination of the sexual script as a latent construct can be facilitated through the use of structural equation modeling. Cross-group comparisons could be employed to examine differences in content and transmission of sexual scripts between racial/ethnic groups.

While some variables do not lend themselves well to modification, such as family structure or race, this study did reveal possible targets for intervention to reduce young adults' lifetime numbers of sexual partners. Parent-adolescent relationship quality was shown to be a significant negative predictor. This finding suggests that an intervention that is designed to increase parent and adolescent joint involvement in decision making and improve trust might be effective for reducing adolescent and young adult number of sexual partners. Adolescent expectations of positive consequences of sex were shown to predict having more sexual partners. While complete modification of this aspect of the intrapsychic script may be impractical and perhaps even undesirable, changes to the script could be the focus of intervention efforts. Such changes might include emphasizing exposure to risk, contextualizing positive consequences of sex as outcomes to be shared with a long-term monogamous partner, and incorporating condom use into the script.

This study was guided by but was not a direct test of sexual script theory. One criticism of sexual script theory is the difficulty of measurement associated with latent constructs. Because the scripts are internal, particularly the intrapsychic script, they may be difficult to directly measure (Plante, 2007). However, the results of this study do support an assumption of sexual script theory that sexual behavior is derived from local culture (Laumann, Gagnon, Michael & Michaels, 1994), particularly from parents (Gagnon & Simon, 1973). The finding that a measure of the adolescent intrapsychic script, expectations of positive consequences of sex, predicted sexual behavior in the expected direction also supports an assumption of sexual script theory that cognitions about sex guide performance of sexual behaviors. Thus, this study indicates that sexual script theory can provide valuable guidance for research examining the development of longitudinal sexual behavior patterns. Furthermore, use of advanced statistical

modeling techniques and large, nationally representative samples to examine constructs of sexual script theory would provide further validation and increase its use in the field as a means to identify and understand the complexities of sexual socialization and sexual behavior.

References

Anderson, J., Wilson, R., Doll, L., Jones, T.S., & Barker, P. (1999). Condom use and HIV risk

behaviors among U.S. adults: Data from a national survey. *Family Planning*

Perspectives, *31(1),* 24-28.

Bartoli, A., & Clark, M. (2006). The dating game: Similarities and differences in dating scripts

among college students. *Sexuality & Culture, 10*, 54-80.

Bearman, P., & Brückner, H. (2001). Promising the future: Virginity pledges and first

intercourse. *American Journal of Sociology, 106*, 859-912.

Brown, J.D., L'Engle, K.L., Pardun, C.J., Guo, G., Kenneavy, K., & Jackson, C. (2006). Sexy

media matter: Exposure to sexual content in music, movies, television, and magazines

predicts Black and White adolescents' sexual behavior. *Pediatrics, 117*, 1018-1027. doi:

10.1542/peds.2005-1406

Brückner, H., & Bearman, P. (2005). After the promise: The STD consequences of adolescent

virginity pledges. *Journal of Adolescent Health, 36*, 271-278. doi:

10.1016/j.jadohealth.2005.01.005

Buhi, E., C.H.E.S., & Goodson, P. (2007). Predictors of adolescent sexual behavior and

intention: A theory-guided systematic review. *Journal of Adolescent Health, 40*, 4-21.

doi: 10.1016/j.jadohealth.2006.09.027

Carver, K., Joyner, K., & Udry, R. (2003). National estimates of adolescent romantic

relationships. In P. Florsheim (Ed.), *Adolescent romantic relations and sexual behavior:*

Theory, research, and practical implications. Mahwah, NJ: Erlbaum.

Cavanagh, S. (2004). The sexual debut of girls in early adolescence: The intersection of race, pubertal timing, and friendship group characteristics. *Journal of Research on Adolescence, 14*, 285-312.

Cavanagh, S., Crissey, S., & Raley, R. (2008). Family structure history and adolescent romance. *Journal of Marriage and Family, 70*, 698-714.

Centers for Disease Control and Prevention (CDC). (2010). *Trends in Sexually Transmitted Diseases in the United States: 2009 National Data for Gonorrhea, Chlamydia and Syphilis*. Atlanta, GA: US Dept of Health and Human Services, Centers for Disease Control and Prevention.

Chen, A. & Thompson, E. (Apr, 2007). Preventing adolescent risky sexual behavior: Parents matter! *Journal for Specialists in Pediatric Nursing, 12,* 119-122.

Chewning, B., Douglas, J., Kokotailo, P., LaCourt, J., Clair, D., MLS, Spec, & Wilson, D. (2001). Protective factors associated with American Indian adolescents' safer sexual patterns. *Maternal and Child Health Journal, 5*, 273-280.

Clawson, C.L., & Reese-Weber, M. (2003). The amount and timing of parent-adolescent sexual communication as predictors of late adolescent sexual risk-taking behaviors. *Journal of Sex Research, 40*, 256-265.

Collins, R., Elliott, M., Berry, S., Kanouse, D., Kunkel, D., Hunter, S., & Miu, A. (2004). Watching sex on television predicts adolescent initiation of sexual behavior. *Pediatrics, 114*, 280-289.

Collins, W.A., Welsh, D.P., & Furman, W. (2009). Adolescent romantic relationships. *Annual Review of Psychology, 60*, 631-652. doi:10.1146/annurev.psych.60.110707.163459

Deptula, D.P., Henry, D.B., & Schoeny, M.E. (2010). How can parents make a difference? Longitudinal associations with adolescent sexual behavior. *Journal of Family Psychology, 24*, 731-739. doi: 10.1037/a0021760

Dworkin, S., & O'Sullivan, L. (2007). "It's less work for us and it shows us she has good taste": Masculinity, sexual initiation and contemporary sexual scripts. In M.Kimmel (Ed.), *The sexual self: The construction of sexual scripts* (pp. 105 – 121). Nashville: Vanderbilt University Press.

Eaton, D., Kann, L., Kinchen, S., Ross, J., et al. (2006). Youth risk behavior surveillance – United States, 2005. *Journal of School Health, 76*, 353-372.

Fan, X., Miller, B., Park, K.-E., Winward, B., Christensen, M., Grotevant, H.D., & Tai, R.H. (2006). An exploratory study about inaccuracy and invalidity in adolescent self-report surveys. *Field Methods, 18*, 223-244. doi: 10.1177/152822X06289161

Fergus, S., Zimmerman, M., & Caldwell, C. (2007). Growth trajectories of sexual risk behavior in adolescence and young adulthood. *American Journal of Public Health*, *97*, 1096-1101. doi:10.2105/AJPH.2005.074609

Fingerson, L. (2005). Do mothers' opinions matter in teens' sexual activity? *Journal of Family Issues, 26*, 947-974. doi: 10.1177/1092513X04272758

Flannery, D., Rowe, D., & Gulley, B. (1993). Impact of pubertal status, timing, and age on adolescent sexual experience and delinquency. *Journal of Adolescent Research, 8*, 21-40. doi: 10.1177/074355489381003

Florsheim, P. (2003). Adolescent romantic relations and sexual behavior: Theory, research, and practical implications. Mahwah, NJ: Erlbaum.

Gagnon, J.H., & Simon, W. (1973). Sexual conduct: The social sources of human sexuality. Chicago, IL: Aldine Publishing Co.

Halpern, C.T., Kaestle, C., Guo, G., & Hallfors, D. (2007). Gene-environment contributions to young adult sexual partnering. *Archives of Sexual Behavior, 36*, 543-554. doi: 10.1007/s10508-006-9084-9

Halpern, C.T., Udry, J.R., Campbell, B., & Suchindran, C. (1993). Testosterone and pubertal development as predictors of sexual activity: A panel analysis of adolescent males. *Psychosomatic Medicine, 55*, 436-447.

Harding, D.J. (2007). Cultural context, sexual behavior, and romantic relationships in disadvantaged neighborhoods. *American Sociological Review, 72*, 341-364.

Hollander, D. (2006). Many teenagers who say they have taken a virginity pledge retract that statement after having intercourse. *Perspectives on Sexual and Reproductive Health, 38*, 168.

Hox, J. (2009). *Multilevel analysis: Techniques and applications* (2nd ed.). Mahwah, NJ: Sage Lawrence Erlbaum Associates.

Hutchinson, M. (2002). The influence of sexual risk communication between parents and daughters on sexual risk behaviors. *Family Relations, 51*, 238-247.

Jaccard, J., & Dittus, P. (2000). Adolescent perceptions of maternal approval of birth control and sexual risk behavior. *American Journal of Public Health, 90*, 1426-1430.

Jaccard, J., Dittus, P., & Gordon, V. (1998). Parent-adolescent congruency in reports of adolescent sexual behavior and in communications about sexual behavior. *Child Development, 69*, 247-261.

Jackson, S. (2007). The sexual self in late modernity. In M. Kimmel (Ed.), *The sexual self: The construction of sexual scripts*. Nashville, TN: Vanderbilt University Press.

Johnson, K. & Tyler, K. (2007). Adolescent sexual onset: An intergenerational analysis. *Journal of Youth and Adolescence, 36*, 939-949. doi: 10.1007/s10964-006-9165-z

Kan, M., Cheng, Y., Landale, N., & McHale, S. (2010). Longitudinal predictors of change in number of sexual partners across adolescence and early adulthood. *Journal of Adolescent Health, 46*, 25-31.

Kimmel, M. (2007). The sexual self: The construction of sexual scripts. Nashville, TN: Vanderbilt University Press.

Kowaleski-Jones, L., & Mott, F. (1998). Sex, contraception and childbearing among high-risk youth: Do different factors influence males and females? *Family Planning Perspectives, 30*, 163-169.

Krahé, B., Bieneck, S., & Scheinberger-Olwig, R. (2007). Adolescents' sexual scripts: Schematic representations of consensual and nonconsensual heterosexual interactions. *Journal of Sex Research, 44*, 316-327.

Kuo, W-H., & Lawrence, J. (2006). Sexual behavior and self-reported sexually transmitted diseases (STDs): Comparison between White and Chinese American young people. *Culture, Health & Sexuality, 8*, 335-349. doi: 10.1080/13691050600784518

Laflin, M., Wang, J., & Barry, M. (2008). A longitudinal study of adolescent transition from virgin to nonvirgin status. *Journal of Adolescent Health, 42*, 228-236.

Lammers, C., Ireland, M., Resnick, M. & Blum, R. (2000). Influences on adolescents' decision to postpone onset of sexual intercourse: A survival analysis of virginity among youths aged 13 to 18 years. *Journal of Adolescent Health, 26*, 42-48.

Landor, A., Simons, L.G., Simons, R.I., Brody, G., & Gibbons, F. (2010). The role of religiosity

in the relationship between parents, peers, and adolescent risky sexual behavior. *Journal*

of Youth and Adolescence. doi:10.1007/s10964-010-9598-2

Laumann, E., Gagnon, J., Michael, R., & Michaels, S. (1994). The social organization of

sexuality: Sexual practices in the United States. Chicago: University of Chicago Press.

Laws, J., & Schwartz, P. (1977). Sexual scripts: The social construction of female

sexuality. Hinsdale IL: Dryden Press.

Lefkowitz, E.S., & Stoppa, T.M. (2006). Positive sexual communication and socialization in the

parent-adolescent context. *New Directions for Child & Adolescent Development, 112*, 39-

55. doi: 10.1002/cd.161

Levinson, R., Jaccard, J., & Beamer, L. (1995). Older adolescents' engagement in casual sex:

Impact of risk perception and psychosocial motivations. *Journal of Youth and*

Adolescence, 24, 349-364.

Longmore, M., Eng, A., Giordano, P., & Manning, W. (2009). Parenting and adolescents' sexual

initiation. *Journal of Marriage and Family, 71*, 969-982.

Longmore, M., Manning, W., Giordano, P., & Rudolph, J. (2003). Contraceptive self-efficacy:

Does it influence adolescents' contraceptive use? *Journal of Health and Social Behavior,*

44(1), 45-60.

Manlove, J., Franzetta, K., Ryan, S., & Moore, K. (2006). Adolescent sexual relationships,

contraceptive consistency, and pregnancy prevention approaches. In A. Crouter & A.

Booth (Eds.), *Romance and sex in adolescence and emerging adulthood: Risks and*

opportunities. Mahwah, NJ: Lawrence Erlbaum.

Manlove, J., Logan, C., Moore, K.A., & Ikramullah, E. (2008). Pathways from family religiosity

    to adolescent sexual activity and contraceptive use. *Perspectives on Sexual and*

    Reproductive Health, 40(2), 105-117. doi: 10.1363/4010508

Maticka-Tyndale, E., Gallant, M., Brouillard-Coyle, C., Holland, D., Metcalfe, K., Wildish, J., &

    Gichuru, M. (2005). The sexual scripts of Kenyan young people and HIV prevention.

    Culture, Health & Sexuality, 7, 27-41.

Meschke, L., Zweig, J., Barber, B., & Eccles, J. (2000). Demographic, biological, psychological,

    and social predictors of the timing of first intercourse. *Journal of Research on*

    Adolescence, 10, 315-338.

Mollborn, S., & Everett, B. (2010). Correlates and consequences of parent-teen incongruence in

    reports of teens' sexual experience. *Journal of Sex Research, 47*, 314-329. doi:

    10.1080/00224490902954315.

Moore, S., Rosenthal, D. (2006). Sexuality in adolescence: Current trends. New York.

    Routledge.

Mosher, W., & Jones, J. (2010). "Use of contraception in the United States: 1982-2008." *Vital*

    and Health Statistics, *23*(29). Hyattsville, MD: National Center for Health Statistics.

Mott, F., Fondell, M., Hu, P., Kowaleski-Jones, L., & Menaghan, E. (1996). The determinants of

    first sex by age 14 in a high-risk adolescent population. *Family Planning Perspectives,*

    28, 13-18.

Murry, V., Hurt, T., Kogan, S., & Luo, Z. (2006). Contextual processes of romantic

    relationships: Plausible explanations for gender and race effects. In A. Crouter & A.

Booths (Eds.), *Romance and sex in adolescence and emerging adulthood: Risks and opportunities*. Mahwah, NJ: Lawrence Erlbaum.

Netting, N., & Burnett, M. (2004). Twenty years of student sexual behavior: Subcultural adaptations to a changing health environment. *Adolescence, 39(153),* 19-38.

O'Donnell, L., Myint-U, A., O'Donnell, C., & Stueve, A. (2003). Long-term influence of sexual norms and attitudes on timing of sexual initiation among urban minority youth. *Journal of School Health, 73*, 68-75.

Plante, R. (2007). In search of sexual subjectivities: Exploring the sociological construction or sexual selves. In M. Kimmel (Ed.), *The sexual self: The construction of sexual scripts*. Nashville, TN: Vanderbilt University Press.

Raudenbush, S. W., & Bryk, A. S. (2002*). Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks: Sage.

Regnerus, M.D. (2005). Talking about sex: Religion and patterns of parent-child communication about sex and contraception. *The Sociological Quarterly, 46*, 79-105.

Rose, A., Koo, H.P., Bhaskar, B., Anderson, K., White, G., & Jenkins, R.R. (2005). The influence of primary caregivers on the sexual behavior of early adolescents. *Journal of Adolescent Health, 37*, 135-144. doi: 10.1016/j.jadohealth.2005.02.009

Rosenbaum, J.E. (2009). Patient teenagers? A comparison of the sexual behavior of virginity pledgers and matched nonpledgers. *Pediatrics, 123*, e110-e120. doi: 10.1542/peds.2008-0407

Rosenthal, D., & Smith, A. (1997). Adolescent sexual timetables. *Journal of Youth and Adolescence, 26*, 619-636.

Rostosky, S., Wilcox, B., Wright, M.L.C., & Randall, B. (2004). The impact of religiosity on

adolescent sexual behavior: A review of the evidence. *Journal of Adolescent Research,*

19, 677-697. doi: 10.1177/0743558403260019

Sandfort, T., Orr, M., Hirsch, J., & Santelli, J. (2008). Long-term health correlates of timing of

sexual debut: Results from a national US study. *American Journal of Public Health, 98*,

155-161.

Santelli, J., Brener, N., Lowry, R., Bhatt, A., & Zabin, L. (1998). Multiple sexual partners among

U.S. adolescents and young adults. *Family Planning Perspectives, 30*, 271-275.

Sheeran, P., Abraham, C., & Orbell, S. (1999). Psychosocial correlates of heterosexual condom

use: A meta-analysis. *Psychological Bulletin, 125(1)*, 96-132.

Siebenbruner, J., Zimmer-Gembeck, M., & Egeland, B. (2007). Sexual partners and

contraceptive use: A 16-year prospective study predicting abstinence and risk behavior.

Journal of Research on Adolescence, 17, 179-206.

Sinha, J., Cnaan, R., & Gelles, R. (2007). Adolescent risk behaviors and religion: Findings from

a national study. *Journal of Adolescence, 30*, 231-249. doi:

10.1016/j.adolescence.2006.02.005

Stephens, D.P., & Phillips, L. (2005). Integrating Black feminist thought into conceptual

frameworks of African American adolescent women's sexual scripting processes.

Sexualities, Evolution and Gender, 7, 37-55. doi: 10.1080/14616660500112725

Taris, T., Semin, G., & Bok, I. (1998). The effect of quality of family interaction and

intergenerational transmission of values on sexual permissiveness. *The Journal of*

Genetic Psychology, 159, 237-250.

Upchurch, D., Mason, W., Kusunoki, Y., & Kriechbaum, M. (2004). Social and behavioral

    determinants of self-reported STD among adolescents. *Perspectives on Sexual and*

    Reproductive Health, 36, 276-287.

Weinstock, H., Berman, S., & Cates, W Jr. (2004). Sexually transmitted diseases among

    American youth: Incidence and prevalence estimates, 2000. *Perspectives on Sexual and*

    Reproductive Health, *36(1),* 6-10.

Wilson, H., & Donenberg, G. (2004). Quality of parent communication about sex and its

    relationship to risky sexual behavior among youth in psychiatric care: A pilot study.

    Journal of Child Psychology and Psychiatry, 45, 387-395.

Zimmer-Gembeck, M.J., & Helfand, M. (2008). Ten years of longitudinal research on U.S.

    adolescent sexual behavior: Developmental correlates of sexual intercourse, and the

    importance of age, gender and ethnic background. *Developmental Review, 28*, 153-224.

    doi: 10.1016/j.dr.2007.06.001

Table 1. Means, standard deviations and ranges of the outcome variable and continuous

predictors (N = 2,880)

Variable	M	SD	Min	Max
Number of Partners, Wave I	0	0	0	0
Number of Partners, Wave II[a]	.33	1.13	0	35
Number of Partners, Wave III[b]	3.49	4.86	0	50
Number of Partners, Wave IV	7.40	12.77	0	300
Parent Religiosity	2.27	.93	0	4
Sexual Communication about Negative Consequences	2.84	.90	0	4
General Sexual Communication	2.70	.95	0	4
Parent Disapproval of Adolescent Sexual Activity	4.19	1.17	0	5
Connectedness	4.28	.61	0	5
Pro-Sex Attitudes	2.49	.80	0	5

[a] N = 2,839; [b] N = 2,764

Table 2. Effects of parent and adolescent variables on growth of number of sexual partners with age (N = 2,880)

Fixed Effect	Coefficient	Event Rate Ratio	95% Confidence Interval
For Intercept, P_0			
Intercept	0.93**	2.52	(2.21, 2.88)
Blended Married	0.28**	1.33	(1.13, 1.56)
Blended Cohabiting	0.31*	1.37	(1.00, 1.86)
Single Parent	0.09	1.10	(0.96, 1.27)
Other Family	-0.02	1.02	(0.76, 1.37)
Parent Education	-0.02	0.98	(0.87, 1.10)
Parent Religiosity	-0.07*	0.93	(0.88, 0.99)
General Sex Communication	0.11**	1.12	(1.06, 1.18)
Connectedness	-0.22**	0.80	(0.73, 0.87)
Hispanic	-0.15	0.86	(0.73, 1.02)
Black	0.35**	1.42	(1.19, 1.68)
Asian	-0.45**	0.64	(0.48, 0.86)
Other Race	0.06	1.06	(0.70, 1.61)
Ever Married	0.07	1.07	(0.96, 1.19)
Ever Pledged	-0.40**	0.67	(0.60, 0.76)
Pro Sex Attitudes	0.22**	1.25	(1.17, 1.33)
For Rate of Change, P_1			
Intercept	0.28**	1.32	(1.30, 1.34)
Parent Education	0.03**	1.03	(1.02, 1.05)
Hispanic	0.02*	1.02	(1.00, 1.05)
Black	-0.03	0.98	(0.96, 1.00)
Asian	0.05*	1.05	(1.00, 1.10)
Other Race	0.02	1.03	(0.97, 1.08)
Ever Married	-0.04**	0.96	(0.95, 0.97)
For Rate of Acceleration, P_2			
Intercept	-0.03**	0.97	(0.97, 0.97)

** $p < .01$, * $p < .05$ (two-tailed test)

Note: The values presented above are unit-specific fixed effects with robust standard errors.

Figure 1. Effect of family structure on change in number of partners with age
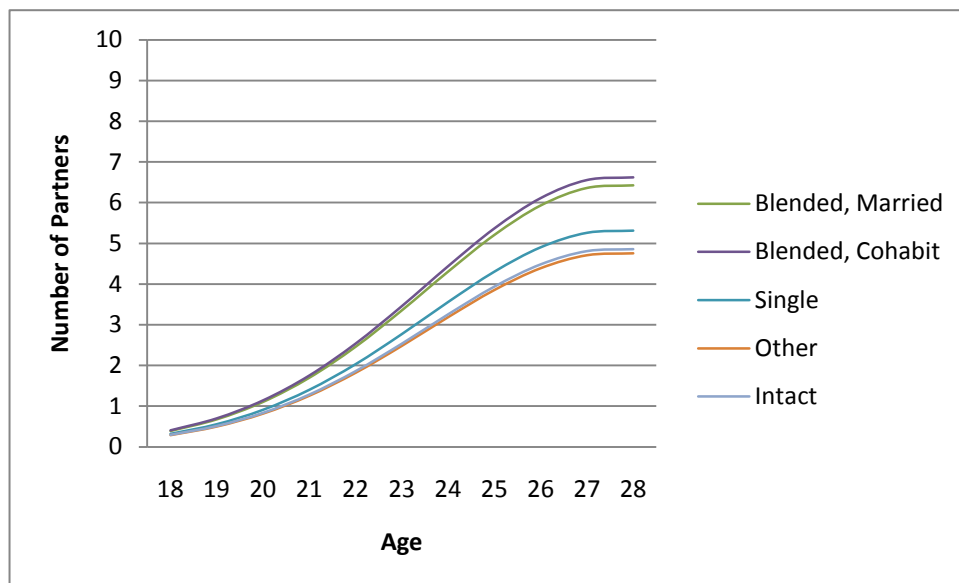
Figure 2. Effect of parent-adolescent sexual communication on change in number of partners with age
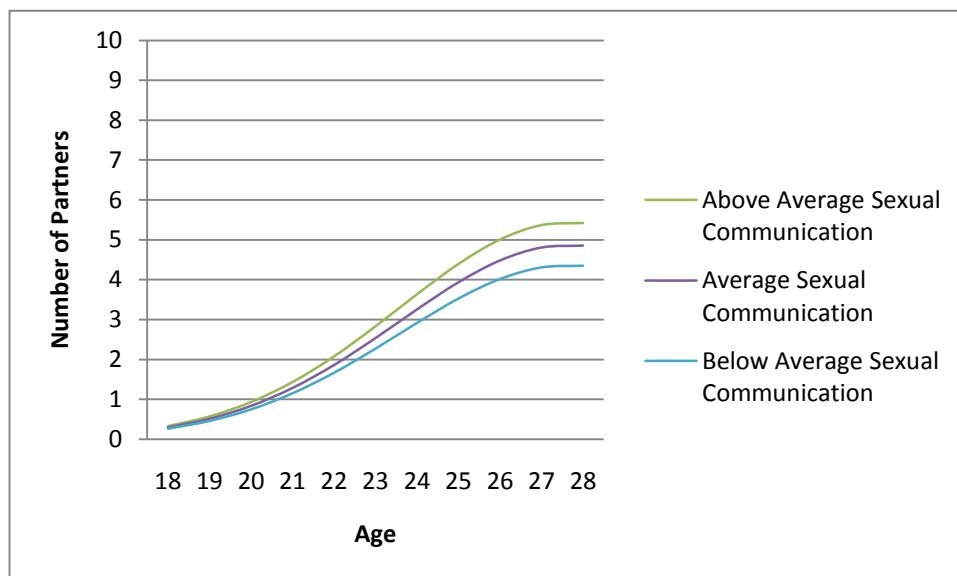
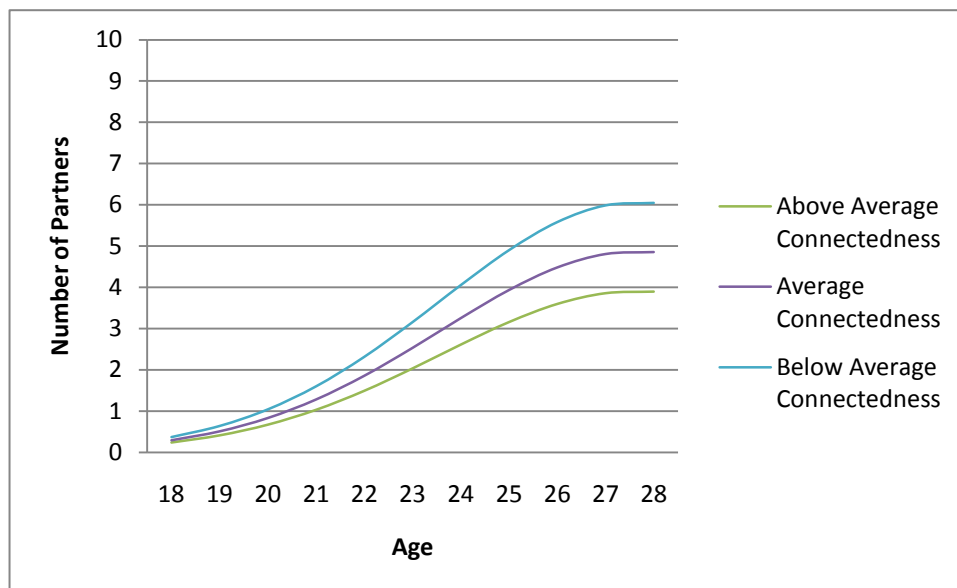Figure 3. Effect of parent-adolescent connectedness on change in number of partners with age

Figure 4. Effect of race/ethnicity on change in number of sexual partners with age