

Believing Sexual Activity Makes One an Adult: Associations with Effective Parenting, and Adolescents' Educational Investments and Cumulative Sexual Risk-taking

by

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Abstract

Adolescent sexual risk-taking has been a hot topic in research and prevention work over the past decade, however, much of the research has focused on the environmental and biological predictors of sexual risk taking and teenage pregnancy (e.g., parenting, environment, early maturation, etc.), while very little research or prevention work has focused on examining the internal motivation of adolescents to engage in sexual risk-taking behaviors. For the present study, we sought to understand the effects of effective parenting and educational investment on adolescents' belief that sexual activity makes one an adult, and the overall effect on adolescents' cumulative sexual risk-taking. The study sample included data prior to implementation of a relationship education program from 1582 high school students from 24 high schools across the southeast. In the study sample, 760 adolescents reported being sexually experienced and 822 of the adolescents reported being sexually inexperienced. Results of the study showed that more effective parenting and greater adolescent investment in education were associated with a weaker belief that sexual activity makes one an adult. More effective parenting and a weaker belief that sexual activity makes one an adult were associated directly with lower adolescent cumulative sexual risk-taking, whereas greater adolescent investment in education had an indirect effect on adolescents' cumulative sexual risk taking through the belief that sexual activity makes one an adult. Multigroup analysis revealed the influence of effective parenting on the belief that sexual activity makes one an adult was the same for sexually experienced and inexperienced adolescents. The association between educational investment and the belief that sexual activity makes one an adult, while significant and negative for both groups, was stronger for sexually inexperienced adolescents. Implications of these findings and suggestions for future studies are discussed.

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Table of Contents

Abstract	ii
Acknowledgments.....	iii
List of Tables.....	vi
List of Figures.....	vii
Introduction	1
Literature Review.....	1
What Does “Adulthood” Mean to Adolescents.....	1
Sex as a Marker of Adult Status	2
Sexual Risk-Taking and its Consequences	3
Demographic Factors.....	5
Protective Factors.....	7
Goals of the Current Study.....	8
Method	9
Sample and Procedure	9
Measures.....	9
Results	11
Preliminary Analysis.....	12
Primary Analysis.....	13
Discussion	15
References	16

Appendix A: HCHC:TY Questionnaire: Study Variables.....	27
Appendix B: Correlation Tables	35
Appendix C: Expanded Literature Review.....	38
Appendix D: Sexual Risk-Taking as a Latent Factor.....	38

List of Tables

Table 1. Descriptive statistics for Main Study Variables by Full, Sexually Experienced and Non-experienced Samples.....	33
Table B1. Mean Comparisons on Analysis and Nonanalysis Samples.....	42
Table B2. Correlations among Key Study Variables for the Full Sample.....	43
Table B3. Correlations among Key Study Variables for Sexually Inexperienced Sample.....	44
Table B4. Correlations among Key Study Variables for Sexually Experienced Sample.....	45
Table B5. Correlations among Key Study Variables and Control Variables.....	46
Table C1: Confirmatory factor analysis for risky sexual behaviors as a latent factor.....	68

List of Figures

Figure 1. Predicting the Belief that Sexual activity is a Marker of Adult Status.....	31
Figure 2. Predicting Cumulative Sexual Risk-Taking	31
Figure 3. Path Coefficients for Effective Parenting and Educational Investment Predicting Belief that Sexual Activity is a Marker of Adult Status	32
Figure 4. Complete Model.....	32

Believing Sexual Activity Makes One an Adult: Associations with Effective Parenting, and Adolescents' Educational Investments and Cumulative Sexual Risk-taking

Adolescence is a developmental period of pubertal maturation and autonomy seeking, as well as a time of increased adolescent influence on family decisions, conflict with parents, and involvement in romantic relationships (Arnett, 2001; Baumrind, 1991; Benson & Johnson, 2009; Coleman & Karraker, 1997; Steinberg, 2001; Steinberg & Morris, 2001). It is during adolescence when young people start making decisions related to education, career and relationships that affect their futures (Brewster, Billy & Grady, 1993). These decisions can be influenced positively by effective parenting and adolescents' efforts to complete their educations (Gutman & Midgley, 1999; Whitbeck, Yoder, Hoyt & Conger, 1999), yet also hindered by faulty beliefs adolescents may hold about how to achieve adult status, as well as by adolescents' engagement in risky behaviors (Gutman, 2006; Huebner & Howell, 2003). Past research shows that adolescents' beliefs and behaviors associated with sexual risk-taking are closely linked (Deptula, Henry, Shoeny, & Slavick, 2006; Lee, Lewis, & Kirk, 2011; Luquis, Brelsford, & Rojas-Guyler, 2012; Meier, 2003). Thus, it is of value to investigate adolescents' beliefs about adult status and how these beliefs matter for risk taking that may limit future potential. In the current study, we examined how the belief that *sexual activity makes one an adult* influences adolescent sexual risk-taking, and how both beliefs about adult status and engagement in sexual risk-taking are associated with adolescents' educational investments and perceptions of the parenting they are receiving.

What does "Adulthood" Mean to Adolescents?

Research on the transition to adulthood has increased dramatically over the years (Andrew, Eggerling-Boeck, Sandefur & Smith, 2006; Arnett, 1997; 2000; 2001; Aronson, 2008);

however, most research has focused on young adult college-aged populations, and little is known about adolescents' beliefs about the transition to adulthood (Arnett, 1997; 2000; 2001). In his research that included adolescent participants, Arnett (2001) found role transitions like finishing education, beginning a full-time job or career, and entering parenthood, to be of less importance to American adolescents than qualities like accepting responsibility for oneself, making decisions independently, being financially independent, complying with social norms, and establishing a relationship with parents as an equal adult. In Arnett's (2001) examination of what criteria constitute the transition to adulthood, he found that teens (13-19 year olds) compared to their older counterparts (emerging adults ages 20-29; adults ages 30-55) were not as apt to believe adulthood meant complying with social norms like using contraception and avoiding conceiving a child (59% for teens; 61% for emerging adults; 69% for adults), avoiding becoming drunk (23%; 27%; 38% for teens, emerging adults and adults, respectively) and avoiding the use of profanity (19%; 23%; 38%, for teens, emerging adults, and adults, respectively). Teens (33%) were more similar to emerging adults (32%) in disagreeing that only having one sexual partner indicated adulthood status than they were to adults (43%). Teens (17%) also were more likely to believe that being committed to a long-term love relationship indicated a transition to adulthood (10% for emerging adults and 11% for adults), and were more likely (57% for teens) than their older counterparts to believe biological transitions like being able to and bear children (46% for emerging adults; 40% for adults) signified adulthood.

Sex as a Marker of Adulthood Status

How adolescents view the attainment of adult status varies, and it may not always be through conventional means, such as completing one's education and establishing a career. Although some adolescents view completion of education as an important component of moving toward adult status, others may not see education as serving that purpose and seek other means, such as sexual activity, as a way to establish adulthood (Edin & Kefalas, 2005). Although Arnett (2001) found that 53% of teens listed biological transitions as marking the transition to adulthood,

the categories of individualism (i.e., being financially independent, accepting responsibility for the consequences of your actions, deciding on personal beliefs independently, and establishing a relationship with parents as an equal adult) and family capacities (i.e., being capable of running a household, keeping a family physically safe, caring for children and providing financially) were rated even higher by the adolescent group compared to emerging adults and adults. Interestingly, previous research has indicated that adolescents who are deprived of emotional support from parents become sexually active earlier and perhaps look to parenthood to both separate themselves from their family of origin and satisfy their need for emotional closeness and love (Edin & Kefalas, 2005; Horowitz, Klerman, Kuo & Jekel, 1991; Woodward, Fergusson & Horwood, 2001). In the current study we explore how the belief that *sexual activity makes one an adult* adds to our understanding of adolescents' risky sexual behavior. This especially may be important when an adolescent does not believe there are other paths (e.g., education) for achieving adulthood status. Thus, for some adolescents – behavior often labeled as “risky,” may in fact be a purposeful attempt to reach adult status.

Ajzen and Fishbein (1970; 1980) argued that adolescents have the cognitive ability to make rational decisions by measuring the risks and benefits of behavior, where their perceptions of the severity of the negative outcomes, as well as the payoff of the positive outcomes, affect their behavioral choices. According to Ajzen and Fishbein's theory of reasoned action, some adolescents may try to achieve adulthood through experimenting with alcohol or drug use, school misconduct, or engaging in sexual risk-taking (e.g., early engagement, multiple partners, low condom use) if they believe that the benefits of such activity outweigh the potential severity of the costs (Ajzen & Fishbein; Harris, Duncan, & Boisjoly, 2002; Spear, 2000).

Sexual Risk-Taking and its Consequences

Evidence has shown that risk-taking behaviors have a developmental trajectory (Igra & Irwin, 1996; Rosenbaum & Kandel, 1990); as adolescents' get older their risk-taking changes and in some cases becomes more risky. Riskier behaviors are associated with lowered levels of

educational investment and attainment (Harris et al., 2002; Warren, Kann, Small, Santinelli, Collins & Kolbe, 1997). Assessment of cumulative risk has been used in research pertaining to the effects of violence on child and adolescent outcomes, as well as to determine how external risk factors (e.g., high parental stress, low socioeconomic status, family disruption, child maltreatment) affect adolescent sexual risk taking (Appleyard, Egeland, van Dulmen & Sroufe, 2005; Kan, Cheng, Landale & McHale, 2010; Price & Hyde, 2009; Taylor, Boris, Heller, Clum, Rice & Zeanah, 2008). In this study we measured our outcome of sexual risk taking using a cumulative risk approach (Appleyard et al., 2005). Specific indicators of sexual risk-taking that have been examined in the literature include: early sexual debut, multiple sexual partners, high frequency of sexual intercourse, low use of condoms when having sexual intercourse, and casualness of the relationship with a sexual partner (Beadnell, Morrison, Wilsdon, Wells, Murowchick, Hoppe... Nahom, 2005; Harris et al., 2002; Kerpelman, McElwain, Pittman, & Adler-Baeder, 2013; Kotchick, Shaffer, Forehand & Miller, 2001; Newman and Zimmerman, 2000).

We considered exposure to multiple sexual risk behaviors as increasing the potential for greater negative sexual health consequences for the adolescent. For example, a sexually active adolescent who is having a high frequency of sex with multiple, casual partners, and is not using condoms is exposed to considerably more sources of risk than a sexually active adolescent who is in a monogamous relationship. However, if the teen in the monogamous relationship uses condoms and birth control inconsistently, that teen's risk for negative consequences increases. Exposure to multiple types of risky sexual behaviors can compromise adolescent well-being (Price et al. 2009; Kotchick, Dorsey, Miller & Forehand, 1999; Small & Luster, 1994), and increase the likelihood of contracting a sexually transmitted disease (STD) and unintended pregnancy (Centers for Disease Control and Prevention (CDC), 2012; Finer, Darroch & Singh, 1999; National Campaign to Prevent Teen and Unplanned Pregnancy, 2012).

Although teen pregnancy is at the lowest level in nearly 40 years (Guttmacher Institute, February 2012), alarming rates of teen pregnancies occur in the United States every year, with 70 pregnancies to every 1,000 female teens; when only including sexually experienced teens, the number grows to 150 pregnancies per 1,000 (Guttmacher Institute, 2012). Pregnancies to African American teens are nearly three times more than pregnancies to non-Hispanic white teens (126 v. 44 per 1,000 respectively). Unintended pregnancies have resulted in \$12.5 billion in costs to the public (Guttmacher, 2008); however, the higher cost is typically seen in poor outcomes for teen parents, as well as children of teen parents, like low education attainment in high school, failure in job training and college programs, as well as overall smaller wage earnings (Fletcher & Wolfe, 2008; Manlove, 1997; 1998). Past research has shown that those who become pregnant during adolescence already differ from their peers in background, as well as education attainment, before they even become pregnant (Hoffman, Foster, & Furstenberg, 1993; Hotz, McElroy, & Sanders, 1997; Moore, Myers, Morrison, Nord, Brown & Edmonston, 1993). Although lower educational achievement can increase risk of teen pregnancy, the converse also is true. Childbearing in adolescence has been shown to hinder female adolescents' completion of high school, prevent college attendance and decrease the likelihood of participation in training programs that offer a means to obtain jobs that support self-sufficiency (Allen, Philliber, Herrling & Kuperminc, 1997; Duncan, 1995; Fletcher et al. 2008).

Demographic factors associated with adolescent sexual risk-taking. In past research, gender, age, race/ethnicity, family structure, family income, and parent education have all emerged as demographic variables associated with adolescent sexual behaviors. Gender differences have been found for number of sexual partners (CDC, 2009), as well as sexual risk-taking tendencies (Robinson, Holmbeck, & Paikoff, 2007) with males taking more sexual risks. Although approximately 6% of adolescents have sexual intercourse before age 13, as adolescents get older they are more likely to have had intercourse, (Kincaid, Jones, Cueller, & Gonzalez, 2011). The average age of first sexual intercourse in the United States is between 16 and 17 years

(Chandra, Martinez, Mosher, Abma, & Jones, 2005; Martinez, Copen, & Abma, 2011). Almost 47% of adolescents have had sexual intercourse before graduating high school, again with males making up the majority engaging in sexual activity (CDC, 2011). Older adolescents are more likely to have a higher frequency of sexual intercourse than their younger peers (CDC; Fergus, Zimmerman, & Caldwell, 2007). Although they have higher sexual activity, older adolescents are also more likely than young adolescents to use birth control methods such as birth control pills, intrauterine devices, and other hormonal contraceptives; however, younger adolescents are more likely to use condoms than are older adolescents (CDC).

Racial and ethnic differences also have been key predictors of adolescent sexual risk-taking, specifically among African American youth who are more likely than their European American peers to initiate sex before age 13, to have sex by the age of 18, to have more sexual partners, and to be currently sexually active (CDC, 2012). Past research also has noted that adolescents in homes with two biological parents who have higher education and income are less likely to engage in risky sexual behavior than are adolescents in other family structures (Manlove, Terry-Humen, Paillo, Franzetta, Williams & Ryan, 2002; Pearson, Mueller, & Frisco, 2006). Adolescents from non-intact families are also at higher risk for early sexual engagement (Brewster et al., 1993; Harris et al., 2002; Manlove et al. 2002; Wilson, 1996), and research has shown that adolescents from lower income families engage in sex earlier, whereas those from higher income families are older at first intercourse, and engage in lower sexual risk-taking (Capaldi, Crosby & Stoolmiller, 1996; Manlove, 1997, 1998; Ramirez-Valles, Zimmerman & Newcomb, 1998; Upchurch, Aneschensel, Sucoff & Levy-Storms, 1998).

In summary, older adolescents, males, black adolescents, adolescents whose parents have less education and lower incomes, and adolescents not living with both biological/adoptive parents are more likely than their counterparts to engage in risky sexual behavior. It is possible these demographic factors also are associated with a stronger belief that sexual activity makes one an adult.

Protective factors associated with sexual risk-taking: Educational investment and effective parenting. Past research shows that effective parenting and adolescent educational investment are associated with less adolescent sexual risk-taking and its consequences. Education can be a source for many positive outcomes for adolescents if they are engaged in school and feel capable of success in academics. Results of a meta-analysis (Kirby, 2002) showed that students who dropped out of school, compared with their peers who remained in school, were younger at sexual debut and were less likely to use contraception and more likely to become (or make someone) pregnant. Past research has shown that adolescents who do well in school and have higher anticipated educational outcomes, as well as who are more engaged in school activities, are more likely to delay sexual activity (Donovan & Jessor, 1985; Gutman et al. 1999; Whitbeck et al. 1999). In contrast, when an adolescent does not feel engaged in school, that adolescent is more likely to seek reinforcing experiences elsewhere (e.g., sexual risk-taking) that may place the adolescent's emotional and physical health at risk (Catalano, Haggerty, Osterle, Fleming, & Hawkins, 2004; Patton et al., 2006). Several notable positive effects of higher education (e.g. high school completion, (some) college education) are delayed childbearing, higher earnings, exposure to different worldviews, lower rates of delinquency, greater ability to contribute to society, and increased chances of having children who will also have those same positive outcomes (Arnett et al. 2000; Astone & McLanahan, 1991; Gutman et al. 1999; Hill, Castellino, Lansford, Nowlin, Dodge, Bates & Pettit, 2004). We expect greater adolescent investment in education to be associated with less endorsement of the belief sexual activity makes one an adult and less cumulative sexual risk-taking.

Parental support (being a source of guidance for children), parental monitoring (knowing where children are, who their friends were, etc.), parental psychological control (hindering adolescent independence of thought and feeling) have been found to be predictors of differing levels of adolescent sexual risk-taking and educational investment (Gutman, 2006; Huebner et al. 2003; Kotchick et al., 1999; Steinberg & Levine, 1997). Adolescents who reported their parents

had high levels of monitoring also reported lower sexual risk-taking and a higher grade point average (Jacobson & Crockett, 2000). Williams, Hedberg, Cox and Deci (2006) found that parental support negatively predicted adolescents' health risk behaviors like smoking or chewing tobacco, as well as risky sexual behaviors. In contrast, parental psychological control has been found to hinder a child's psychological development and autonomy, as well as to be detrimental to the child's relational development with peers and intimate partners (Schafer, 1959; Barber, 1996; Kuppens, Grietens, Onghena & Michiels, 2009). Parental psychological control also has been found to be associated with harsh parenting, as well as to be a significant predictor of adolescent delinquent behavior, anxiety and depression (Nelson & Coyne, 2009; Pettit, Laird, Dodge, Bates & Criss, 2001), and to predict higher sexual risk-taking (Rodgers, 1999). Overall, we expect that a combination of high parental support and monitoring and low psychological control will be associated with less endorsement of the belief that sexual activity makes one an adult and less cumulative sexual risk-taking.

Goals of the Current Study

The overall aim of the current study was to add to knowledge about adolescents' beliefs about sexual behavior and adult status and adolescents' engagement in sexual risk-taking. First, we examined how effective parenting behaviors and adolescents' educational investment predicted the belief that sexual activity makes one an adult (see Figure 1). We predicted that more effective parenting and greater adolescent educational investment would be associated with less endorsement of the belief that sexual activity makes one an adult. We also tested whether being sexually experienced moderated the associations among the variables. Next, we examined adolescents' reports of effective parenting, educational investment and the belief that sexual activity makes one an adult as predictors of cumulative sexual risk-taking (see Figure 2). We expected that more effective parenting and greater adolescent investment in education would be associated with lower cumulative sexual risk-taking. We also expected that a stronger endorsement of the belief that sexual activity makes one an adult would predict greater

cumulative sexual risk-taking. Finally, we examined whether the belief that sexual activity makes one an adult mediated associations between effective parenting and cumulative sexual risk-taking or between educational investment and cumulative sexual risk-taking.

Method

Sample and Procedure

The current study used data from the fourth cohort of the Healthy Couples Healthy Children: Targeting Youth (HCHCTY) project. The purpose of HCHCTY was to evaluate a relationship education curriculum called Relationship Smarts PLUS (Pearson, 2007) aimed at educating high school students on how to recognize, develop, and maintain healthy relationships, as well as ways to identify unhealthy relationships. For the purposes of this study, only the pretest survey data, collected prior to the implementation of the program, were used.

A total of 1786 high school students across 24 public high schools in a southern state participated in the fourth year cohort of the study. Those reporting racial/ethnic backgrounds other than African American or European American were excluded from the current study in order for race to be included as a control variable. Independent samples t-tests were used to compare the nonanalysis (N=204) and analysis (N=1582) samples. Only one mean difference was found between the two groups; those in the nonanalysis sample who were sexually experienced were slightly lower in condom use than those in the analysis sample who were sexually experienced (see Table B1 in Appendix B). The study sample was almost equally divided by gender (53% were female) and race (53% were African American). The average age of respondents was 15.6 years old (SD = 0.96). The majority of respondents' parents had a high school education with some higher education or job training. Twenty percent of respondents lived in single parent families, 23% lived in a stepfamily, 36% lived with both biological parents and 21% lived in alternative family situations. The adolescents were asked to indicate whether they had had sexual intercourse and were given the following definition: 'Sexual intercourse' means having sex with the male's penis inside the female's vagina. This is sometimes called 'going all

the way.’ In the study sample, 760 adolescents reported being sexually experienced and 822 of the adolescents reported being sexually inexperienced.

Measures

Cumulative Sexual Risk-taking. Risky sexual behavior was examined using 5 separate variables: **age of sexual debut** (response categories ranged from 9 years or younger to 16 years or older; 16 years or older is the lowest risk category for sexually experienced adolescents); **multiple sex partners** (response categories ranged from 1 person to 5 or more people; lowest risk category is 1 person for sexually experienced adolescents); **frequent sexual activity** (response categories ranged from 1 (less than once per week) to 4 (4 or more times per week); less than once per week is the lowest risk category for sexually experienced adolescents); **condom use** (response categories ranged from 1 (none of the time) to 5 (always); always is the lowest risk response for sexually experienced adolescents); **seriousness of relationship with sexual partner** (response categories ranged from 1 (not dating) to 4 (seriously dating only each other); lowest risk is seriously dating only each other for sexually experienced adolescents). Adolescents who were not sexually experienced had the response option of “*I have never had sexual intercourse.*”

The cumulative sexual risk variable was constructed by giving each sexually experienced respondent a score of “0” for the lowest risk response, and a score of “1” for all other responses. Respondents’ scores on the five sexual behavior items were summed, yielding a score of sexual risk-taking that ranged from 0 (lowest cumulative risk) to 5 (highest cumulative risk).

The Belief that Sexual Activity Makes One an Adult was assessed with two items “*If a boy my age has sexual intercourse, he proves he is a man*” and “*If a girl my age has sexual intercourse, she proves she is a woman.*” The response categories ranged from 1 (disagree) to 5 (agree). These items were averaged ($r = .71^{***}$); higher scores indicate a stronger belief that engaging in sexual activity makes one an adult.

Adolescent educational investment was a latent factor indicated by four indicators. **Self-reported grades** is a single item (e.g. *What types of grades do you mostly make in your academic*

classes?) with a 7-point response range from 1 (Mostly A's) to 7 (Mostly D's) (item was recoded so a higher score reflects higher grades). **Positive school attitudes** were assessed with three items drawn from the work of Fordham (1988) and Fordham and Ogbu (1986). An example item is: *Doing well in school helps you do better in life*. Items were responded to on a scale of 1 (strongly disagree) to 5 (strongly agree), with a reliability coefficient of $\alpha = .58$. Six items assessed **school efficacy** ($\alpha = .72$; e.g. *I feel fully capable of finishing high school*) and 6 items assessed **academic efficacy** ($\alpha = .70$; e.g., *I feel fully capable of making good grades in high school*). The school and academic efficacy items were created for the HCHCTY survey instrument (see Saint-Eloi Cadely, Pittman, Kerpelman & Adler-Baeder, 2011). Items for both of these measures were responded to on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Across the four indicators, higher scores indicate greater adolescent educational investment.

Effective parenting behaviors was a latent factor comprised of three indicators. **Parental monitoring** consisted of five items similar to those used in Brown, Mounts, Lamborn and Steinberg (1993). An example item is: *My parents know where I go after school*. All items were measured on a three-point scale: 1 (Nothing at All) to 3 (A Lot) and with a reliability coefficient of $\alpha = .75$. **Parental support** was comprised of five items from the Quality of Relationships Inventory (Pierce, Sarason, & Sarason, 1991). Responses were on a four-point scale, 1(Not at All) to 4 (Very Much) with a reliability coefficient of $\alpha = .87$. An example item is: *To what extent can you turn to your parent (parent figure) for advice*. **Parental psychological control** was measured with five items from the Psychological Control Scale (Barber et al., 1996). Responses were on a three-point scale (reverse coded to indicate low psychological control), 1 (Not at All) to 3 (A Lot Like Them) with a reliability coefficient of $\alpha = .76$. Example item: *My parents (parent-figures) are people who would like to be able to tell me how to feel or think about things all the time*. Higher scores indicate more effective parenting.

Demographic control variables included adolescent race (1 = black; 2 = white); adolescent gender (1=female; 0 = male); adolescent's age (range: 13 to 19 years); parental education level (highest level obtained ranging from (1) did not complete high school to (5) graduate degree taken from the parent with the highest level of education); family income (receive free/reduced lunch 1 = yes; 0 = no); and family structure (1= two parent biological or adoptive family; 0= all other family forms).

Results

The aims of the current study were to examine how effective parenting and adolescents' educational investment predicted the belief that sexual activity makes one an adult in the full sample of adolescents, and how each of these variables predicted adolescents' cumulative sexual risk-taking in the sexually experienced subsample of adolescents. First we present the preliminary analyses that address the sample descriptive statistics and the confirmatory factor analyses for our latent factors. Next we present the results for the models we fit to examine our study hypotheses (see Figures 1 and 2 for the study hypotheses).

Preliminary Analyses

The means, standard deviations, and skew statistics for all of the key study variables can be found for the full sample and separately for the sexually inexperienced and experienced subsamples in Table 1. All variables were normally distributed. On average, the respondents had relatively high educational investment and rated their parents, on average, as showing somewhat high levels of supportiveness and moderate levels of monitoring and psychological control. On average, the sexually experienced respondents had a moderate cumulative risk-taking score. Mean comparisons between the sexually experience and inexperienced groups showed that the sexually inexperienced group was significantly higher than the sexually experienced on all the study variances except school attitudes and the belief that sex makes one an adult. The two groups did not differ in their school attitudes and the sexually experienced group had a stronger belief than the sexually inexperienced group that sex makes one an adult. The key study

variables were significantly associated with one another as expected (see Appendix B, Tables B2 through B5).

Confirmatory Factor Analysis was used to examine the measurement models for the latent variables of effective parenting (3 indicators) and educational investment (4 indicators). The indicators loaded significantly for effective parenting (standardized factor loadings ranged from .50 to .67) and educational investment (standardized factor loadings ranged from .46 to .81).

After conducting the preliminary analyses, two structural equation models were fit using Mplus (Muthén & Muthén, 2009) to address our research hypotheses. Fit was assessed using the chi-square statistic (Kline, 2011), Comparative Fit Index (CFI), Tucker Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980). A CFI and TLI greater than .90 and a small nonsignificant RMSEA indicate good fit (Hu & Bentler, 1999).

Primary Analyses: Sexual Activity Makes One an Adult, and Cumulative Sexual Risk-Taking

Model 1: Sexual activity makes one an adult. In Model 1 (see Figure 3) we included the full sample of adolescents (N = 1582) to determine whether effective parenting and educational investment predicted adolescents' belief that sexual activity makes one an adult. We then conducted a multigroup analysis to examine whether and how the paths differed for sexually experienced and inexperienced adolescents. The model fit the data adequately (see Figure 3). Effective parenting and adolescents' educational investments both significantly and negatively predicted the adolescents' beliefs that sexual activity makes one an adult. That is, more effective parenting and greater adolescent investment in education were associated with a weaker belief that sexual activity makes one an adult. Effective parenting and educational investment were positively associated with each other. Nineteen percent of the variance in sexual activity makes one an adult was explained by the variables in the model (see Figure 3). The analysis was repeated with the set of control variables added to the model to ensure that the findings were

robust. All of the significant associations among the key variables remained with the control variables included.

Multigroup analysis was employed to compare sexually experienced and sexually inexperienced adolescents on the strength of the paths from effective parenting and educational investment to the belief that sexually activity makes one an adult. We constrained each path, one at a time, to be equal for sexually experienced and sexually inexperienced adolescents and conducted delta chi square tests (with 1 degree of freedom) to determine whether either of the paths differed between the groups. Results indicated that the path from effective parenting to the belief that sexual activity makes one an adult did not differ in strength for sexually experienced ($B = -.22 (.06) \beta = -.13^*$) and inexperienced ($B = -.35 (.06) \beta = -.22^{**}$) adolescents ($\Delta \chi^2 = 0.90$). For both groups it was negative and significant. The path from educational investment to the belief that sexual activity makes one an adult was also significant and negative for both groups; however, it was stronger for the sexually experienced ($B = -.29 (.05) \beta = -.33^{***}$) compared to the sexually inexperienced ($B = -.17 (.05) \beta = -.21^{***}$) adolescents ($\Delta \chi^2 = 4.15$).

Model 2: Cumulative sexual risk-taking. In Model 2, we narrowed our focus to the sexually experienced adolescents ($n = 760$) to examine whether effective parenting, educational investment and the belief that sexual activity makes one an adult predicted adolescents' cumulative sexual risk-taking. We also tested whether the belief that sexual activity makes one an adult mediated the paths from effective parenting or educational investment to adolescents' cumulative sexual risk-taking. The model fit the data well (see Figure 4). Both effective parenting and educational investment were significant and negative predictors of the belief that sexual activity makes one an adult. Effective parenting, but not educational investment, significantly and negatively predicted cumulative sexual risk-taking, whereas the belief that sexual activity makes one an adult significantly and positively predicted adolescents' cumulative sexual risk-taking. Effective parenting and educational investment were significantly and positively correlated with each other. Thus, this model showed that effective parenting predicted

lower cumulative sexual risk-taking. Furthermore, greater educational investment predicted a weaker belief that sexual activity makes one an adult; however, the stronger the belief that sexual activity makes one an adult, the greater the cumulative sexual risk-taking. The model explained 16% of the variance in the belief that sexual activity makes one an adult and eight percent of the variance in cumulative sexual risk-taking. With the control variables added to the model, all associations among the key study variables remained significant, however the association between effective parenting and the belief that sexual activity makes one an adult changed from significant to marginal ($B = -.15$ (.06) $\beta = -.10$; $p = .09$).

In order to examine whether the belief that sexual activity makes one an adult mediated the paths between educational investment and effective parenting to adolescents' cumulative sexual risk-taking, we fit the model with and without the mediator. Without the mediator in the model, effective parenting ($B = -.42$ (.14) $\beta = -.19^{***}$), but not educational investment ($B = -.11$ (.08) $\beta = -.08$) significantly predicted cumulative sexual-risk-taking. The significant association between effective parenting and the belief that sexual behavior makes one an adult had already been established for the sexually experienced group when testing moderation with Model 1. Thus the path from effective parenting to cumulative sexual risk-taking was the only one that met the criteria for testing mediation. However, the path from effective parenting to cumulative sexual risk-taking remained significant when the belief that sexual activity makes one an adult (the potential mediator) was included in the model (see Figure 4). A delta chi square test (with one degree of freedom) was used to determine whether constraining the path from effective parenting to cumulative sexual risk-taking to zero did violence to the fit of the model. The results of the delta chi square test indicated a $\Delta\chi^2$ value of 8.30 (which well exceeded the critical value of 3.84); thus it was concluded that the belief that sexual activity makes one an adult did not mediate the path from effective parenting to cumulative sexual risk taking.

Although educational investment was not directly associated with cumulative sexual risk-taking, its association with the intervening variable suggested a possibility of an indirect effect.

The results of our test for an indirect effect indicated that educational investment influenced cumulative sexual risk-taking through its negative association with the belief that sexual activity makes one an adult (Indirect Effect: $B = -.08 (.02)$ $\beta = -.05^{**}$).

Discussion

The aim of the current study was to add to knowledge about adolescents' engagement in risky sexual behaviors by examining associations among effective parenting, educational investment, the belief that sexual activity makes one an adult, and adolescents' cumulative sexual risk-taking. It is important to understand adolescents' beliefs about sexual behavior, since beliefs are strongly associated with sexual behaviors (e.g., Deptula et al., 2006; Lee et al., 2011), as well as to understand factors that influence such beliefs. Our findings confirmed our hypothesis that adolescents who perceive receiving more effective parenting and who have a strong investment in education are less likely to believe that adult status is achieved through sexual activity. This finding adds to the existing literature concerning adolescents' beliefs about pathways to adulthood (Arnett et al. 2001; 2007; Edin et al. 2005) by highlighting both effective parenting and adolescent educational engagement as important predictors of adolescents' internalized motivations concerning sexual activity and adult status. In addition, we found that believing sexual activity is way to achieve adult status increased the likelihood of higher cumulative sexual risk-taking among our sexually experienced participants. Therefore, strengthening positive influential factors (e.g., effective parenting and educational investment) may reduce the likelihood that adolescents will believe sex is a pathway to adult status, which in turn, could be used as a mechanism for decreasing sexual risk-taking and teenage pregnancy.

Sexual Activity Makes One an Adult

For the full sample, both effective parenting and adolescents' educational investment were significant and negative predictors of adolescents' believing that sexual activity makes one an adult. The comparison of sexually inexperienced and sexually experienced adolescents indicated no difference in the association between effective parenting and the belief that sexual

activity makes one an adult. The fact that there was no difference in the association between effective parenting and adolescents' beliefs, regardless of sexual experience, is an indication that parenting behaviors may only go so far in predicting adolescent beliefs that sexual activity makes one an adult, and other influential factors on adolescents' beliefs associated with the family, peer group, community, and school need to be considered. Alternately, it can be interpreted that parenting behaviors are influential on adolescents' beliefs whether or not the adolescent has sexual experience and provide an important source of support for adolescents' thinking about their futures and how to achieve adulthood. However, other family factors, such as parents' age at first intercourse and childbearing, whether the adolescent has teenage siblings who are currently sexually active or teen parents, and the extent to which the parents discuss sexual beliefs and behaviors with their adolescents should be taken into account when attempting to understand parental and family influences on adolescents' beliefs about sexual behavior and adulthood (Miller, Benson & Galbraith, 2001; Benson & Furstenberg, 2007). Additional family factors to consider are whether the adolescent has experienced family hardship or has had to assume adult responsibilities (e.g. caring for younger siblings, work to help support the family) as these experiences are likely to affect how the adolescent views adulthood status (Appleyard et al., 2005; Johnson & Mollborn, 2009; Kan et al., 2010; Price et al., 2009; Taylor et al., 2008).

Moderation tests further showed that the association between educational investment and the belief that sexual activity makes one an adult was negative and significant for both sexually experienced and inexperienced adolescents, but was stronger for the sexually experienced adolescents. Overall, the findings indicate that educational investment matters for all adolescents, regardless of sexual experience, when it comes to their beliefs about sex and adult status. It appears, however, that educational investment is particularly important when an adolescent is sexually experienced. These results suggest that when adolescents are sexually experienced, but they are invested in education, they are less likely to hold the belief that sexual activity is a viable option to achieve adult status, which in turn is associated with less cumulative sexual risk-taking.

Thus, educational investment may be a protective factor for adolescents, and especially for those who are currently sexually active. It also may be that some adolescents who are sexually experienced have realized that sexual activity was not a successful means to achieve adult status. Such a belief may especially be true among adolescents who are sexually active, but doing well in school. This is consistent with the literature that adolescents who are engaged and do well in school have lower sexual risk-taking (Astone et al., 1991; Gutman et al., 1999; Hill et al., 2004).

Cumulative Sexual Risk-taking

Including adolescents' beliefs about sexual activity as a marker of adult status in our model enabled us to see how internal motivations contributed to sexually experienced adolescents' cumulative sexual risk-taking. Adolescents' who hold the belief that sexual activity achieves adult status were more likely, on average, have higher cumulative sexual risk taking. In addition, we found that effective parenting directly and negatively influenced adolescents' cumulative sexual risk-taking even when their belief about sex achieving adult status was included in the model. In fact, the findings showed that effective parenting behaviors were important not only in predicting adolescents' cumulative sexual risk-taking directly, but also as predicting a lower likelihood that adolescents will believe that sexual activity makes one an adult. These results support previous theorizing and empirical findings that parenting matters for children's risky beliefs and behaviors (Bronfenbrenner, 1979; Erikson, 1968; Glasgow, Dornbusch, Troyer, Steinberg & Ritter, 1997; Gutman et al., 2006; Huebner et al., 2003; Kotchick et al., 1999; Upchurch et al., 1999).

Although at the bivariate level three of our four educational investment indicators were significantly and negatively associated with adolescents' cumulative sexual risk-taking, in our complete model, educational investment did not directly predict adolescents' cumulative sexual risk-taking as we hypothesized. Rather, educational investment was indirectly associated with adolescents' cumulative sexual risk-taking through its negative, direct association with adolescents' beliefs that sexual activity makes one an adult. This pattern of association suggests

the importance of adolescents believing they have viable alternatives (such as educational attainment) for reaching adult status, and having supports in place that reinforce these beliefs. When they do, they are less likely to consider less healthy alternatives for achieving adulthood (Beal & Crockett, 2010; Lochner, 2010; Manlove et al., 1997; 1998). Alternately, the power of less healthy alternatives is likely to increase when constructive means for reaching adult status appear out of reach to the adolescent (Ajzen et al. 1970; 1980; Harris et al., 2002; Spear et al., 2000). Furthermore, the findings of the current study suggest a need consider a multilevel approach to sexual health education for adolescents that targets the importance of effective parenting, adolescent educational investment, and adolescent beliefs about how to achieve adulthood, in addition to offering sexual health knowledge and skills (Kotchick et al., 2001; Price et al., 2009; Ramirez et al., 1998; Reyna et al., 2006; Small et al., 1994).

An additional possible reason for the lack of direct association between educational investment and cumulative sexual risk-taking may have to do with the way educational investment was measured. Our educational investment indicators were measured using adolescents' beliefs about education (with the exception of current grades). It appears adolescents' beliefs about education associate more strongly with adolescents' beliefs about sexual activity, than with risk-taking behaviors. Furthermore, the covariance between effective parenting and educational investment was relative strong. It might be that effective parenting and educational investment overlapped in the variance explained in cumulative sexual risk-taking. Thus, once we accounted for parenting influences on cumulative sexual risk-taking, there is not enough unique variance left over for education investment to explain.

Finally, our hypothesis that the belief that sexual activity makes one an adult would mediate the paths between effective parenting and adolescents' cumulative sexual risk-taking was not supported. A possible explanation for lack of mediation could be that effective parenting was a strong, direct predictor of adolescent cumulative sexual risk-taking because effective parenting

messages are internalized by the adolescent in ways that reduce engagement in risky sexual behavior above and beyond the influence of the belief that sexual activity makes one an adult.

Limitations and Future Directions

Although this study contributes to the body of knowledge addressing adolescent sexual risk-taking, several limitations need to be considered. The data were adolescent self-report, which precluded the inclusion of actual parenting behaviors or perceptions of their parenting, as well as how others (i.e. parents and teachers) experienced adolescents' engagement in school and their academic efficacy. Our measure of adolescents' belief that sexual activity makes one an adult was only two items, which limited how much we could operationalize the meaning of adult status in general, as well as how adolescents' perceptions of sexual engagement being a viable option of achieving adult status as opposed to other milestone options (e.g., educational milestones, responsibility-taking milestones, leadership milestones). Only eight percent of the variance in adolescents' cumulative sexual risk-taking was explained by our model, which suggests there is much more to be explained about adolescent cumulative sexual risk-taking than we addressed in the current study. One last important limitation is that our data are cross-sectional, and therefore we can only speculate about order of influence. Future research should focus more fully on operationalizing what adolescents believe are markers of adulthood using different sets of questions pertaining to how they believe adulthood is achieved (see Arnett, 2001 for other potential areas to assess). Perhaps future research could incorporate qualitative interviewing to compile a more thorough story of what adolescents believe they need to do to achieve adult status. As it seems in all research, a more diverse sample is needed in order to fully understand the effects of parenting, educational investment and ideology on adolescent cumulative sexual risk-taking. Multigroup analysis could be used to understand the differing effects of more effective/less effective parenting, higher/lower educational investment and ideology about sexual behavior and adulthood on adolescents' cumulative sexual risk-taking. A more complex look at adolescents' family and neighborhood environments (e.g. parents' age at first childbearing,

adolescent sibling parenthood, roles models in the community, etc.) would also be useful for more fully understanding adolescents' internal motivation in taking more sexual risks.

The relationship between educational investment and adolescents' beliefs about sexual activity making one an adult should be examined more closely in order to understand more fully when ideology concerning adulthood and sexual activity begins to develop, and how investment in education, or lack thereof, is associated with the development of this ideology. As noted by Ajzen and Fishbein (1970; 1980) who theorized that adolescents' have the cognitive ability to weigh the costs and benefits of behavioral choices, it is important to understand what ideological yardstick adolescents are using to appraise these costs and benefits, and how educational challenges, barriers, successes and failures factor into this assessment.

Finally, much of the research focused on adolescent sexual risk-taking has examined factors external to adolescents' beliefs about sex as predictors of early and risky sexual activity; however, little research has actually asked adolescents what the benefits and rewards are for becoming sexually active. Although the current study focused only on the reward of achieving adult status, the findings suggest that it is critical to include adolescents' beliefs about the rewards/costs of sexual activity, as well as their broader beliefs about achieving adult status, when trying to understand adolescents sexual risk-taking behaviors (Arnett et al. 2000; 2001; Edin et al., 2005; Johnson et al., 2009). In order to effectively reduce adolescent sexual risk-taking and adolescent pregnancy, the internal motivations of adolescents must be addressed.

Overall, our findings have confirmed that effective parenting, educational investment and adolescent beliefs about sexual activity making one an adult are meaningfully associated with adolescent cumulative sexual risk-taking, either directly or indirectly. As research in this area moves forward, there is the opportunity to contribute to the understanding of an important topic of adolescent health, which in turn can foster the development of effective solutions to problems associated with risk-taking that can compromise adolescents' health and future potential.

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Table 1. Means, Standard Deviations, and Skew Statistics for the Sexual Risk Taking, Belief that Sexual Activity Makes One an Adult, Effective Parenting, and Educational Investment Variables (shown for the full sample, and separately for the sexually experienced and sexually inexperienced samples).

Variable	Full Sample			Sexually Inexperienced ^a			Sexually Experienced		
	Mean	SD	Skew(SE)	Mean	SD	Skew(SE)	Mean	SD	Skew(SE)
Cumulative Sexual Risk Taking	-	-	-	-	-	-	3.00	1.16	-.35(.09)
Sexual Activity=Adult Status	1.95	.83	.73(.62)	1.69***	.73	1.15(.09)	2.24	.83	.41(.09)
Educational Investment									
School Attitudes	4.30	.80	-1.37(.06)	4.32	.80	-1.50(.09)	4.30	.80	-1.21(.09)
School Efficacy	4.60	.68	-1.91(.06)	4.66***	.61	-2.30(.09)	4.49	.73	-1.62(.09)
Academic Efficacy	4.06	.78	-.63(.06)	4.12**	.76	-.77(.09)	4.01	.80	-.50(.09)
Grades	4.67	1.50	-.32(.06)	5.04***	1.43	-.62(.09)	4.27	1.43	-.07(.09)
Effective Parenting									
Parental Monitoring	2.49	.45	-.74(.07)	2.58***	.41	-.96(.10)	2.38	.47	-.48(.10)
Parental Support	2.86	.82	-.38(.06)	2.92**	.79	-.40(.09)	2.79	.86	-.33(.10)
Parental Psychological Control	2.24	.55	-.44(.06)	2.30***	.53	-.50(.09)	2.18	.58	-.37(.10)

^aIndependent samples t-tests were used to compare the sexually inexperienced and the sexually experienced groups on the study variables; ** $p < .01$; *** $p < .001$

Figure 1. Predicting the Belief that Sexual Activity Makes One an Adult

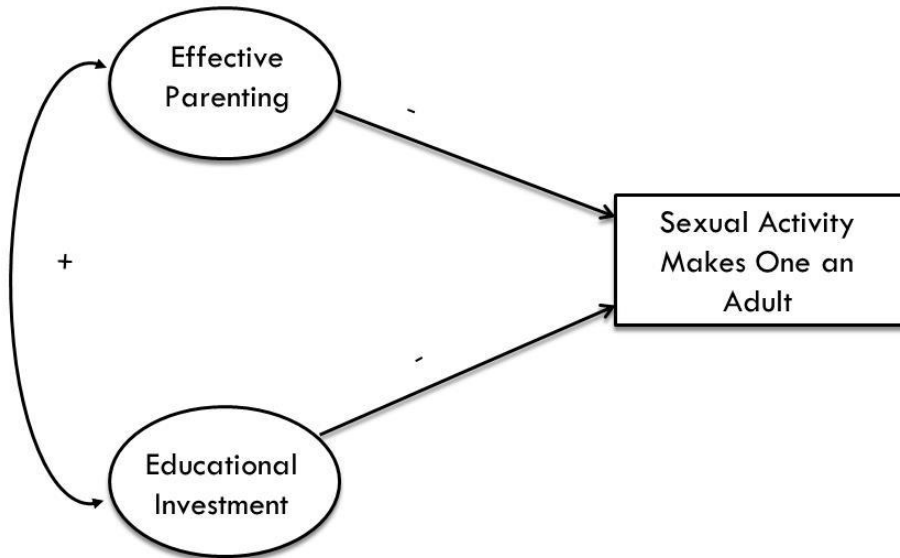


Figure 2. Predicting Cumulative Sexual Risk-Taking

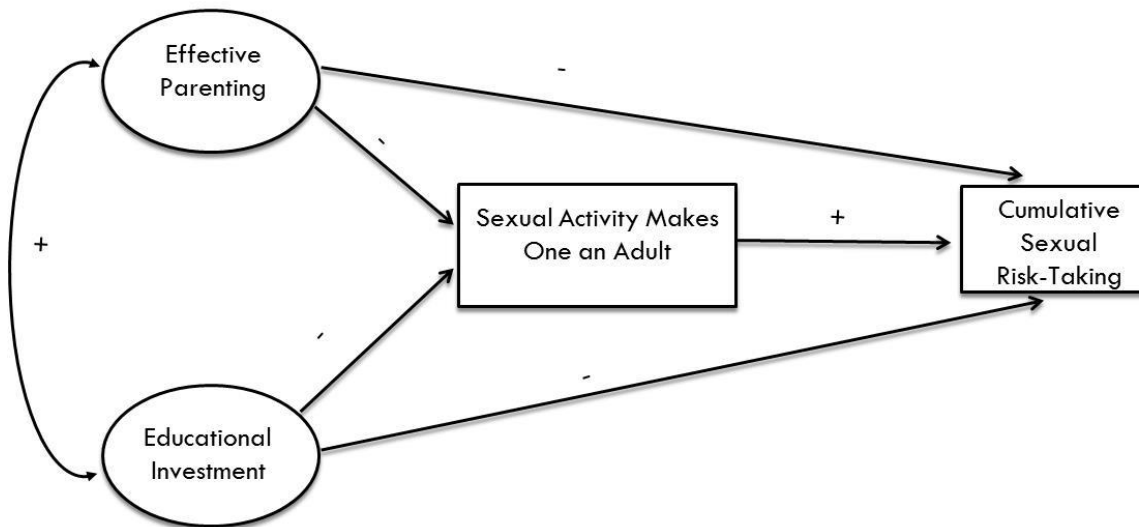
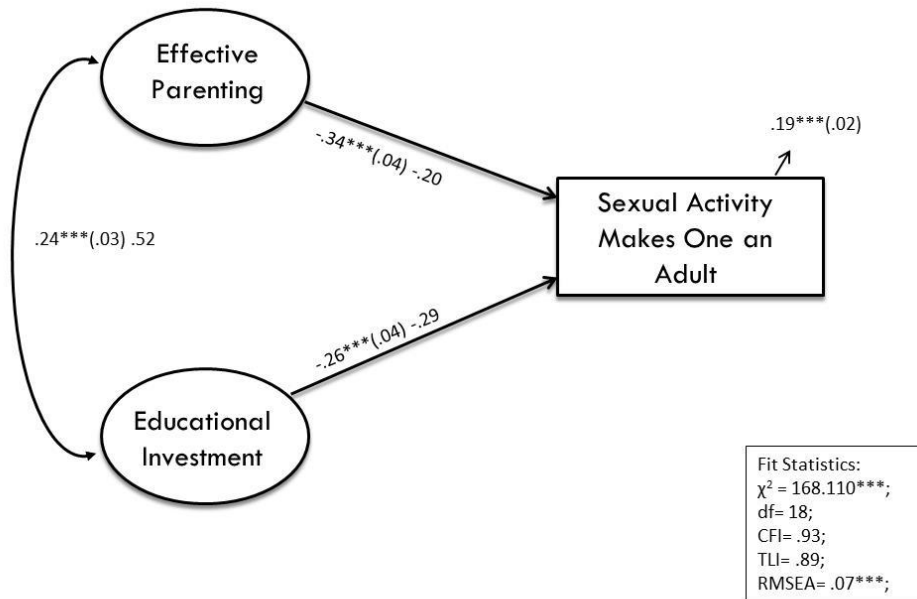
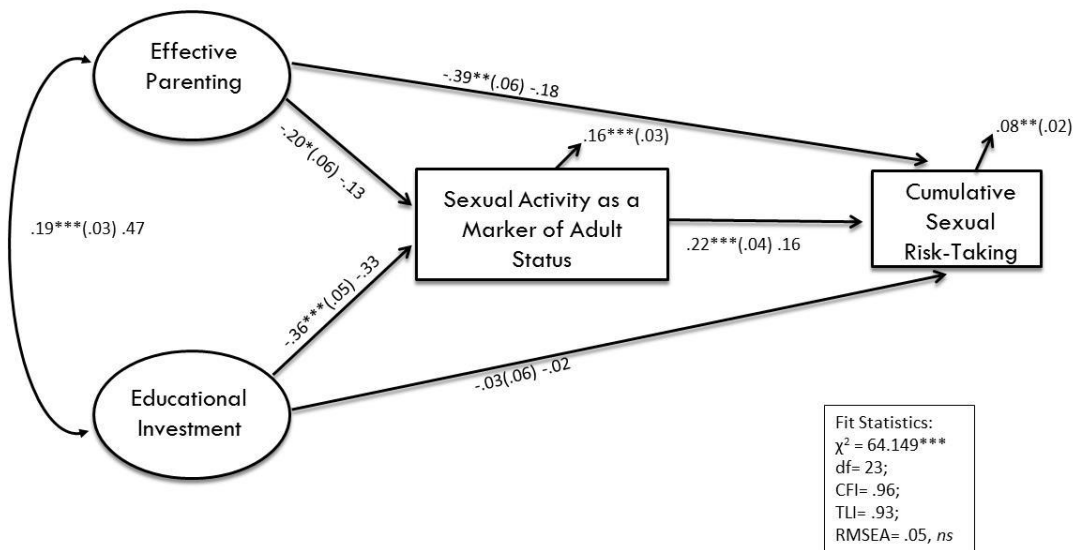


Figure 3. Effective Parenting and Educational Investment Predicting the Belief that Sexual Activity Makes One an Adult



Model results reported as follows: Unstandardized (Standard Error) Standardized; *** $p < .001$.

Figure 4. Effective Parenting and Educational Investment Predicting Both Sexual Activity Makes One an Adult and Cumulative Sexual Risk-Taking; Sexual Activity Makes One an Adult Predicting Cumulative Sexual Risk-Taking.



Model results reported as follows: Unstandardized (Standard Error) Standardized; * $p < .05$; ** $p < .01$; *** $p < .001$.

Appendix A
HCHCTY Questionnaire: Study Variables

Adolescent Demographics

1. Age: 12 13 14 15 16 17 18 19 20 21 22 >22
2. Sex: (A) Male (B) Female
3. Race/Ethnicity:
 - (A) Black/African American
 - (B) White/Caucasian
 - (C) Hispanic/Latino
 - (D) Native American
 - (E) Asian American
 - (F) Other: _____ (Please specify)
4. Do you receive a free or reduced lunch? (A) Yes (B) No

Family Demographic Variables

5. THINK OF THE PEOPLE WITH WHOM YOU LIVE.

FOR EACH ROW BELOW, PUT A CHECK IF YOU LIVE WITH THIS TYPE PERSON AT LEAST SOME OF THE TIME:		
1	Original Mother (Biological or Adoptive)	
2	Original Father (Biological or Adoptive)	
3	Step-Mother	
4	Step-Father	
5	Biological Brothers	
6	Step-Brothers	
7	Half-Brothers	
8	Biological Sisters	
9	Step-Sisters	
10	Half-Sisters	
11	Any Children of Your Own	
12	Aunts and/or Uncles	
13	Grandparents	
14	Other	

6. Think about the parents (or parent figures) with whom you live all or most of the time and circle the number that shows the highest diploma or degree he or she has obtained so far:

a. Father/Father-Figure

b. Mother/Mother-Figure

- (0) I do not have a father (figure)
- (1) no diploma
- (2) High school diploma/GED
- (3) Junior College/Trade School
- (4) 4-year College
- (5) Advance Degree beyond College

- (0) I do not have a mother (figure)
- (1) no diploma
- (2) High school diploma/GED
- (3) Junior College/Trade School
- (4)4-year College
- (5) Advance Degree beyond College

7. What is your parents’ marital/relationship status? (Circle 1)

- (1) Living together but not married
- (2) Married to each other
- (3) Divorced
- (4) Never married to each other and not living together
- (5) Other)_____

Parenting Variables (Monitoring, Support and Psychological Control)

Parental Monitoring

8. Think about how much your parents know about how you spend your time. Answer the next 5 questions with the following categories:

- 1 = They know nothing at all**
- 2 = They know a little**
- 3 = They know a lot**

My parents know		Nothing at all	A little	A lot
1	Who your friends are	1	2	3
2	How you spend your money	1	2	3
3	Where you are after school	1	2	3
4	Where you go at night	1	2	3
5	What you do with your free time	1	2	3

Parental Support

9. Think about the parent(s) or parent-figure(s) you spend the most time with. Please describe how you feel about these relationships. Use the scale below to indicate how much the statement describes this/these relationships.
1 = Not at all 2 = A Little Bit 3 = Quite a Bit 4 = Very Much

To what extent can you turn to a parent (parent figure):		Not at all	A Little bit	Quite a bit	Very much
1	for advice about problems?	1	2	3	4
2	for help with a problem?	1	2	3	4
3	to give you honest feedback, even if you might not want to hear it?	1	2	3	4
4	to listen to you when you are very angry at someone else?	1	2	3	4
5	to distract you from your worries when you feel under stress?	1	2	3	4

Psychological Control

10. How well does each statement below describe your parent(s) or parent-figure(s)?
1 = Not like them 2 = Somewhat like them 3 = A lot like them

My parents (parent-figures) are people who:		Not like them	Somewhat like them	A lot like them
1	Change the subject whenever I talk	1	2	3
2	Often interrupt me	1	2	3
3	Would like to be able to tell me how to feel or think about things all the time	1	2	3
4	Are always trying to change how I feel or think about things	1	2	3
5	Bring up past mistakes when they criticize me	1	2	3

Educational Investment Variables (Grades, School Efficacy, Engagement)

Grades

11. What types of grades do you MOSTLY make in your academic classes? (Circle 1)

- (1) All A's
- (2) Mostly A's and B's
- (3) Mostly B's
- (4) Mostly B's and C's
- (5) Mostly C's
- (6) Mostly C's and D's
- (7) Mostly D's or less

School Efficacy

12. Indicate how much you agree with the following statements:

		Strongly Disagree		?	Strongly Agree	
1	Doing well in school helps you do better in life	1	2	3	4	5
2	The things you are taught in school are pretty useless once you graduate from high school	1	2	3	4	5
3	Trying hard in school is a waste of time	1	2	3	4	5

13. Please answer the next questions about finishing high school.

- 1 = Strongly Disagree**
- 2 = Disagree a Little Bit**
- 3 = Neutral or Can't Decide between Disagree or Agree (?)**
- 4 = Agree a Little Bit**
- 5 = Strongly Agree**

		Strongly Disagree		?	Strongly Agree	
1	I hope to graduate from high school	1	2	3	4	5
2	I feel fully capable of finishing high school and graduating	1	2	3	4	5
3	I believe it is likely that I will finish and graduate from high school	1	2	3	4	5
4	I sometimes worry that I will fail or drop out of high school before finishing	1	2	3	4	5
5	I am not sure that I can avoid failing or dropping out of high school before finishing	1	2	3	4	5
6	I am afraid that failing or dropping out of high school before finishing is pretty likely	1	2	3	4	5

14. Please answer the next questions about your grades.

- 1 = Strongly Disagree**
- 2 = Disagree a Little Bit**
- 3 = Neutral or Can't Decide between Disagree or Agree (?)**
- 4 = Agree a Little Bit**
- 5 = Strongly Agree**

		Strongly Disagree		?	Strongly Agree	
1	I hope to make good grades in high school	1	2	3	4	5
2	I feel fully capable of making good grades in high	1	2	3	4	5
3	The chances are really good that I will make good grades in high school	1	2	3	4	5
4	I sometimes worry about making bad grades in high school	1	2	3	4	5
5	I am not sure whether I can avoid making bad grades in high school	1	2	3	4	5
6	I believe the chances are good that I will make bad grades in high school	1	2	3	4	5

Sexual Behavior Makes One an Adult

15. Please use the scale below to indicate your agreement or disagreement.

- 1 = Strongly Disagree**
- 2 = Disagree a Little Bit**
- 3 = Neutral or Can't Decide between Disagree or Agree (?)**
- 4 = Agree a Little Bit**
- 5 = Strongly Agree**

		Strongly Disagree		?	Strongly Agree	
a.	If a boy my age has sexual intercourse, he proves he is a man.	1	2	3	4	5
b.	If a girl my age has sexual intercourse, she proves she is a woman.	1	2	3	4	5

Sexual Risk Taking (Frequency, Number of Partners, Seriousness of Relationship, Age at First Intercourse)

16. Have you ever had sexual intercourse? “Sexual intercourse” means having sex with the male’s penis inside the female’s vagina. This is sometimes called “going all the way.”

- (a) no (b) yes

17. In the past 1 month (30 days), did you have sexual intercourse?

- (a) no (b) yes

18. How long did you know the person with whom you most recently had sexual intercourse?

- (a) I have never had sexual intercourse
 (b) I knew the person less than a week
 (c) I knew the person for over a week but less than a month
 (d) I knew the person between 1 and 3 months
 (e) I knew the person between 3 and 6 months
 (f) I knew the person for more than 6 months

19. How serious is your relationship with the person with whom you most recently had sexual intercourse?

- (a) I have never had sexual intercourse
 (b) We are not dating
 (c) We are dating casually
 (d) We are dating seriously, but we see other people
 (e) We are dating seriously and are only dating each other

20. How often did you have sexual intercourse during the last 30 days?

- (a) I have never had sexual intercourse
 (b) less than once per week
 (c) once per week
 (d) 2-3 times per week
 (e) 4 or more times per week

21. How old were you when you first had sexual intercourse?

- (a) I have never had sexual intercourse
 (b) 9 years old or younger
 (c) 10 years old
 (d) 11 years old
 (e) 12 years old
 (f) 13 years old
 (g) 14 years old
 (h) 15 years old
 (i) 16 years old or older

22. During your life, with how many different people have you had sexual intercourse?

- (a) I have never had sexual intercourse
 (b) 1 person
 (c) 2 people
 (d) 3 people
 (e) 4 people
 (f) 5 people or more people

23. In the last month, how much of the time did you or your sexual partner use a condom (rubber) when you had sexual intercourse?

- (a.) I have never had sexual intercourse
 (b.) None of the times
 (c.) Less than half of the times
 (d.) About half of the times
 (e.) Most of the times
 (f.) Always

Appendix B: Mean and Correlation Tables

Table B1. Means, Standard Deviations for the Analysis and Non-analysis Sample

Variable	Analysis Sample (N=1582)		Non-analysis Sample (N=204)	
	Mean	SD	Mean	SD
Sexual Behaviors^a				
Seriousness of Relationship with Sex Partner	1.11	1.51	1.06	1.53
Frequency of Sex	.78	1.06	.74	1.14
Age of Sexual Debut	13.68	1.83	13.83	1.49
Number of Sexual Partners	1.26	1.72	1.24	1.76
Condom Use	3.84**	1.51	3.25	1.64
Sexual Activity=Adult Status	1.95	.83	1.91	.85
Educational Investment				
School Attitudes	4.31	.79	4.38	.87
School Efficacy	4.58	.68	4.53	.64
Academic Efficacy	4.07	.78	4.04	.77
Grades	4.67	1.48	4.83	1.55
Effective Parenting				
Parental Monitoring	2.49	.54	2.44	.45
Parental Support	2.86	.82	2.71	.90
Parental Psychological Control	2.24	.56	2.16	.54

^a Comparisons between the sexually experienced subsamples

** $p < .01$

Table B2. Correlations among the Key Study Variables among full sample.

	Sex = Adult Status	School Attitudes	School Efficacy	Academic Efficacy	Grades	Parental Support	Parental Monitoring	Low Parental Psych Control	Cumulative Sexual Risk
Sex = Adult Status	1								
School Attitudes	-.28**	1							
School Efficacy	-.25**	.34**	1						
Academic Efficacy	-.30**	.40**	.50**	1					
Grades	-.28**	.22**	.40**	.51**	1				
Parental Support	-.20**	.24**	.16**	.22**	.11**	1			
Parental Monitoring	-.32**	.20**	-.20**	.23**	.27**	.33**	1		
Low Par. Psych Control	-.13**	.17**	.22**	.23**	.18**	.37**	.28**	1	
Cumulative Sexual Risk	.22**	-.05	-.10*	-.13**	-.14**	.10**	-.22**	-.11**	1

** $p < .01$

Table B3. Correlations among the Key Study Variables for the Sexually InExperienced (Virgin) Sample.

	Sex = Adult Status	School Attitudes	School Efficacy	Academic Efficacy	Grades	Parental Support	Parental Monitoring	Low Parental Psych Control
Sex = Adult Status	1							
School Attitudes	-.32**	1						
School Efficacy	-.20**	.31**	1					
Academic Efficacy	-.23**	.40**	.53**	1				
Grades	-.21**	.21**	.43**	.57**	1			
Parental Support	-.21**	.31**	.16**	.23**	.11**			
Parental Monitoring	-.25**	.20**	.13**	.21**	.28**	.33**	1	
Low Parental Psych Control	-.10**	.20**	.21**	.30**	.21**	.40**	.28**	1

** $p < .01$

Table B4. Correlations among the Key Study Variables for the Sexually Experienced (nonVirgin) Sample.

	Sex = Adult Status	School Attitudes	School Efficacy	Academic Efficacy	Grades	Parental Support	Parental Monitoring	Low Parental Psych Control	Cumulative Sexual Risk
Sex = Adult Status	1								
School Attitudes	-.26**	1							
School Efficacy	-.24**	.40**	1						
Academic Efficacy	-.30**	.41**	.50**	1					
Grades	-.21**	.25**	.35**	.44**	1				
Parental Support	-.14**	.20**	.14**	.21**	.07*	1			
Parental Monitoring	-.30**	.20**	-.22**	.22**	.17**	.32**	1		
Low Parental Psych Control	-.10**	.20**	.20**	.20**	.11**	.37**	.25**	1	
Cumulative Sexual Risk	.22**	-.05	-.10*	-.13**	.14**	-.10**	-.22**	-.12**	1

** $p < .01$

Table B5. Correlations between Control Variables and Key Study Variables

	Cumulative Sexual Risk	Sex = Adult Status	School Attitudes	School Efficacy	Academic Efficacy	Grades	Parental Support	Parental Monitoring	Parental Psych Control
Age	-.09*	.01	-.03	-.06*	-.04	-.23	.01	-.02	.002
Sex	-.20**	.36**	-.15**	.14**	.11**	.18**	.09**	.20**	-.01
Race	-.10	-.12**	-.14**	.08**	-.007	.23**	-.05	.14**	.06*
Eligible for Free/Reduced Lunch	.05	.08**	.05	-.18**	-.11**	-.27**	.02	-.10**	-.06*
Parent Edu	-.05	-.07*	.03	.17**	.15**	-.11	.02	.02	.04
Biological Families versus other	-.03	-.14**	.03	.11**	.07**	.24**	.04	.14**	.09**

** $p < .01$

Appendix C: Literature Review

The aims of this literature review are to summarize previous research that is a necessary building block for the present work, as well as to highlight gaps in knowledge that this paper aims to address. Areas reviewed include: adolescent beliefs about sexual behavior and adult status, adolescent sexual risk-taking, family and adolescent demographic variables that influence adolescent sexual risk-taking, parenting behaviors indicative of effective parenting, and indicators of adolescent educational investment. These latter two areas have been shown to be protective factors associated with reduced adolescent sexual risk-taking.

Beliefs about Sexual Behavior and Adult Status

Variation in criteria that indicate when an individual becomes an adult (e.g., chronological age, leaving their parents' home, first job, financial independence, marriage; Arnett, 2000; Whitbeck et al., 1999) makes understanding the transition to adulthood a challenging topic of research, especially given the many responsibilities and consequences of adulthood status attainment. In relatively recent studies it was found that older adolescents reported feelings of independence, such as making their own decisions, as signs they had achieved adulthood. However, when younger adolescents were interviewed they reported privileges, such as spending time with mixed gender peers without an adult present or dating, as markers of adulthood (Arnett et al., 2000; Tilton-Weaver, Vitunski & Galambos, 2001).

In the U.S., most adolescents begin engaging in romantic dating relationships between the ages of 12 and 14 (Arnett, 2001). Such relationships are seen as chances for sexual experimentation and partners change frequently, putting sexually active adolescents at risk for contracting a sexually transmitted disease (STD) or experiencing an unintended pregnancy. Engaging in more adult-style relationships while the adolescent brain is still developing its decision-making capacity increases the chances that adolescents will engage in early sexual activity, as well as having multiple sexual partners at a young age (Arnett et al., 2000; Reyna & Farley, 2006;). In their research, Tilton-Weaver et al. (2001) refer to adolescents who take on adult roles (i.e. having a job, using alcohol, being sexually active, becoming parents) without

being psychologically mature as “adultoids.” Taking on adult roles before they are developmentally appropriate is detrimental to adolescent development.

Another concern about adultoids, or adolescents who consider themselves to be subjectively older than they actually are, is that many adolescents do not list education as a marker of maturity, which is consistent with previous research findings that younger adolescents see privileges as key markers of maturity (Arnett et al., 2000; Tilton-Weaver et al., 2001). Adolescent adultoids may not see their education as a priority, or as a way to achieve adulthood, but rather see risk-taking activities such as early sexual engagement as their path to adulthood. When adolescents do invest in education, however, this not only promotes subsequent educational attainment (Beal & Crockett, 2010), it also is associated with less risk-taking behaviors, including sexual risk-taking (Lochner, 2010; Manlove, 1997, 1998). Evidence suggests there are certain factors that predict adolescent education investment (Arnett et al., 2000; Astone & McLanahan, 1991; Hill, Castellino, Lansford, Nowlin, Dodge, Bates & Pettit, 2004), such as family structure, family income, parent education and parenting behaviors (support, monitoring and psychological control) (Gutman, 2006; Huebner & Howell, 2003; Kotchick, Dorsey, Miller & Forehand, 1999; Glasgow, Dornbusch, Troyer, Steinberg & Ritter, 1997). Where the current study differs from the wide body of research in adolescent sexual risk-taking is the specific examination of whether adolescents see sexual engagement as a marker of adulthood. That is, adolescents who believe sexual engagement makes one an adult, as well as who have low educational investment are expected to have higher sexual risk-taking (Jessor, 1991; Scales, 1999). It has been established that higher sexual risk-taking can lead to outcomes such as teen pregnancy, which can have detrimental effects for the teen’s health and life outcomes, including lowered education attainment (Harris, Duncan & Boisjoly, 2002; Warren, Kann, Small, Santinelli, Collins & Kolbe, 1997).

Adolescents who think themselves incapable of academic success will begin striving for adulthood through other behaviors, such as sexual relationships (Jessor, 1991). If adolescents believe an avenue of achieving adulthood is blocked by their inadequacies or environmental obstacles, and if they do not do well in school and think it is impossible for them to graduate high school or attend college, they

may choose accomplishable goals, like having sex with multiple partners or not using birth control methods in hopes of becoming parents and therefore achieving adulthood status. These may be seen as risky behavior by society, but ultimately they are successful in achieving adulthood from the adolescents' perspectives and those of their peers (Arnett, 2000; Compas, Hinden & Gerhardt, 1995; Jessor, 1991; Scales, 1999).

Brewster's (1994) research indicates that when opportunities for social or economic advancements are low, adolescents are more likely to engage in risky sexual behaviors. These findings are echoed in the work of other researchers who also noted that when students see education as a resource they can use to their benefit, they are less likely to engage in risky behaviors and vice versa (for those students who do not see education as a resource for themselves they will have higher engagement in risky sexual behaviors) (Moore, Simms, & Betsey, 1986; Ohannessian & Crockett, 1993). When education is not an option to students to increase their status, they will turn to other means of reaching mature status. Several researchers note that motherhood is one way for adolescent girls to "achieve status associated with womanhood" (Burton, 1990, 2005; Furstenberg, 1991; Manlove, 1997, 1998). A main question we hope to answer is: *To what extent do effective parenting and educational investment predict the belief among adolescents that sexual activity makes one an adult?*

Sexual Risk-Taking Behaviors

This section addresses adolescent sexual risk-taking and the adolescent demographic variables associated with these behaviors. The sexual risk-taking behaviors addressed in the current study include: early age at first sexual initiation, high frequency of sexual activity, high number of partners, the seriousness and of the intimate relationship, and inconsistent or lack of condom use. The average age of first sexual intercourse in the U.S. is between 16 and 17 years (Chandra et al., 2005; Martinez et al., 2011), as adolescents get older, the more likely they are to have engaged in sexual behaviors. In fact, 47% of adolescents have had sexual intercourse by the time they graduate high school (CDC). In addition, older adolescents are more likely to have higher levels of sexual risk-taking, yet are more likely than

younger adolescents to use a variety of birth control methods, whereas younger adolescents are more likely to use condoms (CDC).

According to a 2011 CDC survey of U.S. high school students, 34% had had sexual intercourse in the past 3 months, 39.8% of those did not use a condom the last time they had sex, 77% did not use birth control, and 15% had had sex with four or more people during their lifetime. Sexual risk-taking behaviors place adolescents at risk of contracting HIV, other STDs, as well as at risk for unintended pregnancy. The CDC also found that an estimated 8,300 adolescents and young adults (ages 13-24) contracted HIV in 2009, nearly half of the 19 million new STDs occurring each year are among people aged 15-24, and more than 400,000 teen girls aged 15-19 gave birth in 2009 (Center for Disease Control, 2012). Early sexual engagement for adolescents can also have negative emotional consequences. Kaltiala-Heino, Kosunen and Rimpela (2003) found that early sexual engagement (heavy petting and intercourse among girls, and intercourse among boys) was related to increased rates of self-reported depression in middle adolescence; the more advanced the sexual engagement, the higher the increase in self-reported depression. The earlier sexual activity begins the higher the chance of becoming pregnant before completing high school. Early sexual activity coupled with short-term and frequent intimate relationships increases risk for STDs and teen childbearing, and the more frequent the sexual activity (oral, anal or vaginal contact) the greater the risk for STD exposure, as well as a higher risk of unintended pregnancy (National Campaign to Prevent Teen and Unplanned Pregnancy, 2012).

The higher number of partners a person has also increases their chances of contracting an STD, as well as unintended pregnancy (Finer et al., 1999). The proportion of high school students in the United States who have four or more partners is 15.3% (CDC, 2011) and the number of partners an adolescent has increases by nearly 20% from 9th (8.7%) to 12th grade (24.1%). Coker, Garrison, McKeown, Richter, Valois and Vincent (1994) examined the correlates of condom use and the number of partners among South Carolina high school students for the CDC's Youth Risk Behavior Survey. The study found a lower condom use correlated with a higher number of partners, particularly among the European American (EA) student population. Males were more likely to have four or more lifetime partners at 63%, where the

majority of the males with four or more partners were African American (49%). Academic self-image was negative associated with failure to use condoms, and number of partners (which were positively correlated with each other) for females in the study. Females also reported less condom use with a partner than did the males in the study. According to the 2011 Youth Risk Behavior Survey, African American youth are more likely than European American peers to initiate sex before age 13, to have sex by the age of 18, to have more sexual partners, and to be currently sexually active (CDC, 2011). Adolescent minorities have higher rates of being sexually active while in high school with African American youth reporting the highest rates (60%), followed by Hispanic youth (48%) and European American youth (44%) (CDC, 2011). With higher rates of sexual activity, African Americans have more diagnosed STDs than their European American peers (CDC, 2011). Kost, Henshaw, and Carlin (2010) found that minority youth also have higher rates of pregnancies, abortions, and births during adolescence than do their European American peers.

Although from the perspective of most adults the effects of sexual risk-taking are detrimental to adolescent development, researchers like Arnett (2000) and Jessor (1991) have introduced the idea that sexual risk-taking is not irrational for adolescents because they have different ideas about developmental goals than adults do. Jessor found adolescent sexual activity was used to gain peer acceptance and respect, as well as autonomy from parents. It also may be used by some adolescents to help them cope with academic failure and achieve adult status. In fact, Lammers, Ireland, Resnick and Blum (2000) found that across males and females, teens who had better school performance had lower levels of sexual activity. Although developmental research has shown that risk-taking is developmentally appropriate for adolescents and young adults, and healthy risk-taking or testing of the limits has few consequences for both health and educational outcomes. The consequences of sexual risk-taking however, like contracting a STD or an unintended pregnancy, have the potential to have a long-term negative impact on not just adolescent health outcomes, but also on their future educational and career outcomes as well (Parsons, 2002).

Adolescents have high numbers of turnover among relationship of partners with varying degrees of intimacy during each relationship, or what researchers and teens alike call “hooking up.” Hooking up often involves sexual activity outside of a dating relationship with multiple partners and high frequency of intercourse (Arnett, 2001; Manning, Giodano & Longmore, 2006). Manning, Giordano & Longmore (2005) found that three fourths of adolescents have their first sexual encounter in a dating relationship, but three fifths eventually have sex with someone they are not dating. In their study on relationship dynamics and adolescent condom use, Manning, Flanigan, Giodano & Longmore (2009) found that if adolescent respondents reported negative relationship dynamics (conflict, mistrust, controlling behavior, jealousy, etc.) in their relationship they had less consistent condom use, as well as if they reported being in a positive relationship (love, enmeshment, salience, self-disclosure). Hooking up increases adolescent risk because with the higher numbers of partners, increased frequency of sexual activity and as Manning et al. (2009) found lower consistency of condom use, there is an increase in exposure to STDs, as well as risk of pregnancy. Knowing that three fifths of adolescents will engage in sexual activity outside of a committed relationship, and that a serious relationship does not necessarily mean an increase in protection against STDs or pregnancy, the question to ask is: *What predicts whether sexually experienced adolescents will take more/less sexual risks (do beliefs about markers of adulthood matter?)*

Family demographic variables influencing sexual risk-taking. Family structure, parental education attainment and family income have been found to be key variables throughout the literature addressing adolescent development and risk-taking behaviors (Arnett, 2001; Miller, Benson & Gailbraith, 2001; Glasgow et al., 1997). Families provide social and economic environments for their children, and imbue values, beliefs and models for conduct (Bronfenbrenner, 1979; Erikson, 1968; Upchurch, Aneshensel, Sucoff & Levy-Storms, 1999). Thus, it is necessary to examine adolescents’ sexual behaviors within the context that surrounds an adolescent’s development. In their study examining the effects of neighborhood context and race on adolescent sexual activity for African Americans, Brewster et al. (1993) found that African American females whose mothers did not complete high school had a greater

risk of early sexual engagement than those whose mothers completed high school or post high school education.

Brewster et al. (1993) found that those adolescents from non-intact families were also at higher risk for early sexual engagement. Previous findings on family structure effects on parenting behaviors indicate that single parent versus biological/adoptive two-parent households differed in parenting behaviors, specifically parental monitoring (Borawski, Ievers-Landis, Lovegreen & Trapl, 2003); single parents generally had less time and resources to monitor their children, which could contribute to early sexual engagement. Findings across studies suggest that adolescents growing up in families where both biological parents are present, on average, have lower risk for early sexual engagement compared with adolescents growing up in single parent families, stepfamilies, and families where no biological parent is present (Upchurch et al., 1999). In their study of family contexts of adolescent sexual activity, Upchurch et al. (1999) determined oldest to youngest median age at first sexual engagement for adolescents based on family structure. Those from two-parent households with both biological or adoptive parents had the highest median age at first sexual engagement across ethnic groups, followed by those in single parent or other family situations, with the youngest median age at first sexual engagement being those living in stepfamilies. Both boys and girls living in other family situations besides two-parent (biological/adoptive) households were significantly more at risk for early sexual engagement. These effects were reduced somewhat when family interactions were added to the statistical model, which supports this study's intent to examine parenting behaviors and family structure together.

Other research in the area of family context effects on adolescent development has found that in addition to predicting adolescent risk-taking, family structure also predicts where adolescents believe themselves to be on the developmental continuum between adolescence and adulthood (Benson & Furstenberg, 2007; Benson & Johnson, 2009; Johnson, Berg & Sirotzki, 2007). In their study examining the effects of family contexts on adolescent's subjective age, Benson and Johnson (2009) found that adolescents living in a single mother household were 36% more likely than their two-parent household counterparts to believe they were developmentally adult. Adolescents in single father, stepfamilies, and

other family situations (e.g., living with other relatives, living with nonrelatives) to be 43%, 44% and 51% respectively, more likely to consider themselves adult, and males were more likely to feel adult than were females. This is consistent with the findings from other studies (i.e., Benson & Furstenberg, 2007; Johnson et al., 2007) that examined the effects of family resources, commonly measured by parent education attainment, on adolescents' feelings of adulthood, where lower family resources positively predicted adolescents' feelings of having achieved adulthood. Finally, in their study of single minority parents and their adolescents, Kotchick et al. (1999) studied the effects of maternal sexual risk-taking on adolescent sexual risk-taking. They found that higher sexual risk-taking for mothers' significantly predicted higher sexual risk-taking among their children, no matter the gender of the child.

Adolescents growing up in families with lower resources tend to have more adult responsibilities, less parental monitoring, and are more likely to move through developmental markers more quickly than their higher resource counter parts (Benson & Johnson, 2009; Furstenberg, Kennedy, McLoyd, Rumbaut & Settersen, 2004). This is significant, especially for those adolescents living in single parent families with the mother as head of household because single mother families are significantly lower resourced based on income and parent education than other families are (Benson & Johnson, 2009; Lempers, Lempers & Simons, 1989). Elders, Van Nguyen and Caspi (1985) found that family economic hardship had opposite effects on young boys compared with young girls. The boys had an increased respect for their fathers, as well as increased reliance on their peer groups, whereas girls had a decrease in self-adequacy and lowered goal aspirations. In addition to family structure and resources, effects of these predictors vary based on gender of adolescent, as Cooney and Mortimer (1999) suggested that more adult household responsibilities might be a greater predictor for adolescent girls' early transition to adulthood because women tend to take on greater household responsibilities than do men. Arnett (2011) suggests young people growing up with lower socioeconomic status "may enter these roles a year or two earlier than their peers in the middle and upper classes...(p. 263)". Arnett also suggests that although young people with lower socioeconomic status may enter into adult roles at earlier times than their more affluent counterparts, they are similar in that the years "from the late teens through twenties are a time of trying

out different possibilities in love and work, and gradually making their way toward more stable commitments” (p. 263).

Demographic variables, however, only explain some of the variability in adolescents’ educational investments and sexual behavior. It also is important to consider parenting behaviors that influence the quality of relationships adolescents’ have with their parents.

Protective Factors Associated with Adolescent Risk-Taking

Effective parenting. As their children’s developmental needs change during adolescence, so do the roles of parents, and several key parenting behaviors have been cited in past research as influencing outcomes for adolescents. Parental support, parental monitoring, parental psychological control have been found to be predictors of differing levels of adolescent sexual risk-taking and educational investment (Gutman, 2006; Huebner & Howell, 2003; Kotchick, Dorsey, Miller & Forehand, 1999; Steinberg & Morris, 1997). Knowing where your child is, how to reach them, making sure they have proper adult supervision are all aspects of parental monitoring (Dishion & McMahon, 1998; Stattin & Kerr, 2000). Differing levels of monitoring have been found to have both positive and negative outcomes on the parent-child relationship, as well as positive and negative outcomes for adolescent sexual engagement and education attainment. Higher levels of parental monitoring were found to be associated with adolescents reporting lower levels of sexual risk-taking and higher GPA levels (Jacobson & Crockett, 2000). Lower levels of parental monitoring have been shown to predict lower levels of school competence for early adolescence, as well as lower substance use (Crouter, MacDermid, McHale & Perry-Jenkins, 1990; Stattin et al., 2000). Luster and Small (1994) also found that the more opportunities for sexual engagement adolescents had (such as when parental monitoring was low), as well as the less reasons they saw to delay sexual activity the more likely they were to be sexually active. Lack of parental monitoring and low educational investment were found to be contributing factors to adolescent sexual engagement. Finally, Stattin and Kerr (2000) made note that the best child outcomes were predicted by a combination of high levels of parental monitoring and support with low psychological control.

Jacobson and Crockett (2000) found in a sample of 7th to 12th graders who reported their parents having higher levels of monitoring (i.e. knew where they were, what they were doing after school, on weeknights and weekends, knew their friends and whether or not they had completed their homework) appeared to offset the negative consequences associated with the lowered capacity of full time working parents to directly supervise their children's activities. The adolescents who reported their parents having high levels of monitoring also reported lower sexual risk-taking, as well as higher GPA. This suggests that parenting behaviors may be more important than family structure, although both are speculated to contribute to adolescents' sexual risk-taking, as well as to adolescents' ideology about adulthood and anticipated education attainment.

Socioeconomic circumstances, as well as number of parents in the household, have also been found to affect parenting behaviors, specifically parental monitoring (Borawski, Ievers-Landis, Lovegreen & Trapl, 2003). Higher resourced parents are more involved in their child's education, which leads to improved school outcomes like school attitude, homework habits, lower drop-out rates & higher academic achievement (Astone et al., 1991; Sui-Chu & Willms, 1996). In their work in the conceptual approaches to parental involvement by social class, Lareau (1987) discovered that parent involvement in their child's education differed based on social class with working class parents more likely to leave the education of their children to their child's teacher. Levels for both monitoring (limiting TV time, limit going out, monitoring homework and home with them after school) and parents' school involvement (volunteer at school, attend PTO meetings) were found to be higher (28%) for two parent families, as well as levels of home discussion about school (Sui-Chu et al., 1996). In addition, Hair, Moore, Garrett, Ling and Cleveland (2008) found that high levels of parental monitoring, that is parents were aware of where their child was and what they were doing, and parental support were associated with more positive adolescent outcomes.

Conger, Cui, Bryant and Elder (2000) also found adolescents raised by supportive parents displayed supportive characteristics towards their own relationship partners, suggesting the relationship between parents and their adolescents is a guide for other relationships in children's lives. Parental

support also has been associated with sexual risk-taking behaviors; for example, Upchurch, Aneshensel, Sucoff and Levy-Storms (1999) found that boys who received high levels of emotional support from their parents were older at first sexual engagement. In their research on protective factors for poor African American middle school students, Gutman and Midgley (1999) suggested that the combination of school engagement and family involvement might make the most difference in academic achievement for students, as well as reduce risk-taking. This echoes previous research suggesting that the negative effects of less optimal family structures (e.g. single parent, step family), low socioeconomic status and other demographics that would label a child “at-risk” could be lessened by effective parenting behaviors, such as involvement and encouragement in a child’s education (Brooks-Gunn, Guang & Furstenberg, 1993; Moore, Myers, Morrison, Nord, Brown & Edmonston, 1993; Dubow & Luster, 1990; Manlove et al. 1997; 1998; Moore & Snyder, 1991).

In contrast to the positive effects associated with parental support, parental psychological control has been linked to negative outcomes for adolescents. Psychological control is defined as “control that constrains, invalidates, and manipulates children’s psychological and emotional experience and expression” (Barber, 1996. p. 3296). Pettit, Laird, Dodge and Criss (2001) defined psychological control as a parent’s “attempts that inhibit or interfere with children’s development of independence and self-direction by keeping the child emotionally dependent on the parent (p. 584). Thus, psychological control is particularly detrimental during adolescence as youth developmentally should be moving toward increased independence from parents. In support of this notion, Upchurch et al. (1999) found that boys and girls who perceived their parents to be over-controlling had younger median ages at first sexual engagement. Barber (1996) and Steinberg (1990) found that parental psychological control undermines adolescent autonomy and self-confidence, as well as increases feelings of personal distress and inadequacy. Few studies concerning adolescent sexual risk-taking have looked at parental psychological control as a predictor. However, the research that has been conducted concerning healthy child and adolescent development has shown high levels of parental psychological control associated with increased rates of anxiety and depression for adolescents, as well as increased delinquency (Pettit, et al.); similar to

what other studies have found to be predictors of early sexual initiation (Capaldi & Crosby, 1996; Lammers, Ireland, Resnick & Blum, 2000). Thus, in this study we ask: *Does the combination of higher parental monitoring and support and lower parental psychological control (i.e., effective parenting) predict weaker beliefs on the part of the adolescent that sexual engagement equals adulthood, as well as reduce adolescents' engagement in sexual risk-taking?*

Adolescent educational investment. In 2008, enrollment in United States public schools for students in 9th through 12th grade was 15 million and is expected to grow substantially by 2019 (National Center for Educational Statistics, 2011). Douglas Kirby (2002) states that students are enrolled in school for a number of years before becoming involved in sexual engagement, therefore, schools have a number of years to influence the sexual risk-taking of adolescents. In this study we will be exploring the impact of adolescent educational investment on sexual risk-taking and beliefs about sexuality making one an adult. Educational investment includes: students' self-reported grades, beliefs about trying hard in school, and efficacy to make good grades and complete school. In our research model, adolescent educational investment is an important pathway to adulthood success. To our knowledge, very little research has explored the connections between educational investment and adolescents' beliefs that sexual activity makes them adults. However the literature does suggest that educational investment is an important factor when it comes to adolescent sexual risk-taking, as well as future educational attainment.

In his meta-analysis of studies on school impact on adolescent sexual risk-taking, Kirby (2002) found that the literature agreed that students who dropped out of school were more likely than their peers who remained in school to engage in sex earlier, to not use contraception, and to get pregnant (Brewster, Cooksey, Guilkey, & Rindfuss, 1998; Darroch, Landry & Oslak, 1999; Manlove et al. 1997; 1998). Kirby (2002) also noted that students who drop out of school, even before they drop out, differ in family structure, family income and parent education from those students who do not. Specifically, school dropouts are more likely to come from families headed by a single parent, with low financial resources, and low parent education attainment. Manlove (1998) found in her examination of studies addressing connections between education attainment and teen motherhood that there seemed to be an underlying

force influencing both education attainment and teen childbearing. That underlying force, Manlove suggested, was educational engagement as most teen mothers in her study had dropped out of school prior to becoming pregnant. This suggests that educational investment is an important preventative factor to adolescent sexual risk-taking.

Social development studies have found that students who do not find rewarding and positive experiences and relationships in school will seek them elsewhere, potentially in behaviors and relationships that place them at risk (e.g., Patton et al., 2006; Catalano, Haggerty, Osterle, Fleming & Hawkins, 2004; Gutman et al., 1999; Whitbeck et al., 1999). Catalano et al.'s (2004) longitudinal work with the *Seattle Social Development* and *Raising Healthy Children* projects found that the earlier students' became academically engaged the better their academic outcomes. In addition to more positive academic outcomes, Catalano et al. also found that the more academically engaged students were, the less involvement they had in risky behaviors including risky sexual activity. An engaged student is less likely to drop out, repeat a grade, or be a discipline problem, leading to a more academically successful student (Catalano et al., 2004).

So far, we know that effective parenting and educational investment are negatively with sexual risk-taking. However, few studies have examined psychological factors, such as what adolescents' believe is valuable about engaging in sex that may predict their sexual risk-taking and be affected by their educational investments as well as the effectiveness of the parenting they are receiving. In this study we hope to add to knowledge in this area by answering the following questions: *Do effective parenting and adolescent's educational investment predict the belief that sexual activity make one an adult and do all three of these variables predict adolescent sexual risk-taking? Does the belief that sexual activity makes one an adult mediate the association between effective parenting and sexual risk-taking or the association between educational investment and sexual risk-taking?*

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Appendix D: Sexual Risk-Taking as a Latent Factor

Initially, we conceptualized sexual risk-taking as a latent factor comprised of six variables, length of relationship, seriousness of relationship, frequency of sexual activity, age at sexual debut, number of partners and condom use. We examined the confirmatory factor analysis results for our sexual risk-taking behaviors and noticed for the full sample, these behaviors all loaded over .90 on the risky sex latent factor. This high consistency was due to half our sample having a zero for all of their sexual risk-taking behaviors because they were not sexually experienced. Our confirmatory factor analyses for our sexually experienced subsample showed that most of the sexual behaviors had loadings of less than .40 on the factor (see Table C1 for the CFA results for the full sample and for the sexually experienced subsample). This led us to the conclusion that among adolescents who are sexually experienced, there is considerable variability in the types of sexual behaviors in which they are engaging (or have engaged) and that engaging in one behavior did not necessarily mean engaging in all of the other behaviors. For example, an adolescent in a monogamous sexual relationship may use methods of birth control other than condoms, as well as have higher frequency of sexual intercourse with their partner. Another sexually experienced adolescent may have multiple partners and frequent sexually activity and always uses condoms. Thus, the latent factor was problematic. Our solution was to consider a cumulative sexual risk variable. This approach permitted us to calculate exposure to different types of risks, where higher scores indicate exposure to more types of risks.

Table C1. Confirmatory factor analysis for risky sexual behaviors as a latent factor (shown for the full sample, and separately for the sexually experienced and sexually inexperienced samples).

Variable	Full Sample			Sexually		
Experienced	B	S.E.	β	B	S.E.	β
Length of time knowing current sex partner	1.00	.00	.91***	1.00	.00	.40***
Seriousness of relationship	1.10	.00	.92***	.68	.06	.26***
Frequency of sex	1.01	.01	.91***	.56	.06	.22***
Age at sexual debut	1.33	.00	.97***	.57	.06	.33***
Number of partners	1.23	.00	.96***	1.08	.06	.46***
Condom use	1.05	.01	.91***	.24	.06	.10
Fit Statistics	$\chi^2 = 584.538$ *** df = 72 CFI = .97 TLI = .96 RMSEA = .06***			$\chi^2 = 277.814$ *** df = 74 CFI = .84 TLI = .80 RMSEA = .06 <i>ns</i>		

*** $p < .001$