

## Protective and Risk Factors Associated with Adolescent Boys' Early Sexual Debut and Risky Sexual Behaviors

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**Abstract** Protective and risk factors associated with rates of early sexual debut and risky sexual behaviors for a sample of low-income adolescent boys were examined using bioecological theory framed by a resiliency perspective. Protective processes examined include a close mother–son and father–son relationship, parental monitoring and family routines, as well as the adolescent boy's academic achievement, expectations, and school recognition. The risk factors assessed were delinquent behaviors, if the adolescent was born to a teenage mother, family structure, monthly family income, risky neighborhood environments, family of origin welfare receipt, and maternal education. Waves one (1999) and two (2001) of *Welfare, Children, and Families: A Three-City Study* were used ( $N = 528$ ; Wave 1 ages 10–14 years). Associations between early sexual debut and risky sexual behaviors with individual, family, school, and neighborhood protective and risk factors were addressed through a series of d-probit and Ordinary Least Squares multiple regression techniques. When protective and risk factors were addressed independently, academic achievement and parental monitoring protected adolescent boys from early sexual debut and risky sexual behaviors while drug and alcohol use and school problems placed them at risk for these behaviors. However, when the model is assessed together, early parental monitoring and academic achievement were

shown to protect boys' early sexual debut and risky sexual behaviors by reducing their delinquent behaviors, specifically early drug and alcohol use and school problems.

**Keywords** Adolescent males · Low-income · Minority · Sexual activity · Risky sexual behaviors

### Introduction

Early sexual activity poses several risks for adolescents. In the United States, 48.5 births per 1,000 adolescents occur each year, creating a series of negative consequences for both boys and girls (Ventura et al. 2002). Even though the adolescent childbearing rate has declined over the past 20 years, this number is still higher than it is in other industrialized nations. Supporting these high rates of teenage childbearing is the fact that approximately 76% of girls and 85% of boys have engaged in sexual intercourse by the time they reach the age of 19 (Schvaneveldt et al. 2001). Related to this article, national data shows that 18 to 19% of adolescents have engaged in sexual intercourse prior to the age of 15 (Brown and Flanigan 2003). While increasing numbers of adolescents are sexually active, researchers have found that adolescents who engage in sexual behavior at especially young ages are at an increased risk for lower levels of academic achievement (Schvaneveldt et al. 2001) and increased levels of school problems and substance use (Whitbeck et al. 1999).

Among these sexually active youth, contraceptive use still remains lower than for adults. Thirty-seven percent of adolescent girls and 51% of adolescent boys do not use condoms when having sexual intercourse and approximately 66% of adolescents had two or more partners (Alan Guttmacher Institute 2002; Centers for Disease Control

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1996). Thus, early sexual activity puts teens at risk for a host of both problem behaviors and sexually transmitted diseases. A final risk related to early sexual intercourse is that these behaviors lead to the societal problem of adolescent pregnancy and parenthood. A large amount of literature has determined the short- and long-term consequences of bearing a child during the teen years (Davis and Friel 2001; Hogan and Kitagawa 1985; Sarri and Phillips 2004); however, little research has addressed protective and risk factors associated with early sexual debut that may lead to these incidents of teenage childbearing. Furthermore, the literature that has addressed these issues has focused mainly on adolescent girls (Guijarro et al. 1999; Kalil and Kunz 1999) rather than boys (Chapin 2000; Hanson et al. 1989; Kirby 2002; Thornberry et al. 1997). In addition, the studies that focus on males only are generally a-theoretical, leading to a topic that is still poorly understood (Kalmuss et al. 2003; Rucibwa et al. 2003; Smith et al. 2005).

The decision to engage in sexual intercourse for the first time is an important transition during adolescence (Brooks-Gunn and Paikoff 1997). Among American adolescents, the decision to initiate sexual intercourse is occurring at earlier ages than in past decades with an increasing number of adolescents becoming sexually active at younger ages (Davis and Friel 2001; Alan Guttmacher Institute 2002a). Early sexual intercourse (before age 15) poses health risks to adolescents, including increased risk of contracting a sexually transmitted infection or experiencing an unintended pregnancy (Albert et al. 2003; Brooks-Gunn and Paikoff 1997; Davis and Friel 2001; Miller et al. 1999). Research has shown that boys (Annie E. Casey Foundation 2005; Moore 2001; United States Centers for Disease Control 2005) and African American adolescents (Annie Casey Foundation 2005; Santelli et al. 2004) are at increased risk for negative health consequences associated with risky sexual activity.

In order to enhance our understanding of these behaviors, the present study investigates protective and risk factors associated with early sexual debut and risky sexual behaviors for an especially vulnerable group: low-income early adolescent boys. In this study, *early sexual debut* is defined as any adolescent boy engaging in sexual intercourse before he is 15 years old. The sexual behavior of early adolescents (younger than 15 years) appears to be socially and psychologically different from older adolescents (15 and older). In addition, the negative consequences are greater for the former age group (Albert et al. 2003). Next, we attempt to shed light on how family, school, neighborhood and individual characteristics may increase or decrease a young boy's propensity to engage in sexual intercourse and risky sexual behaviors. Based on previous work that shows a strong relationship between early sexual debut and number of

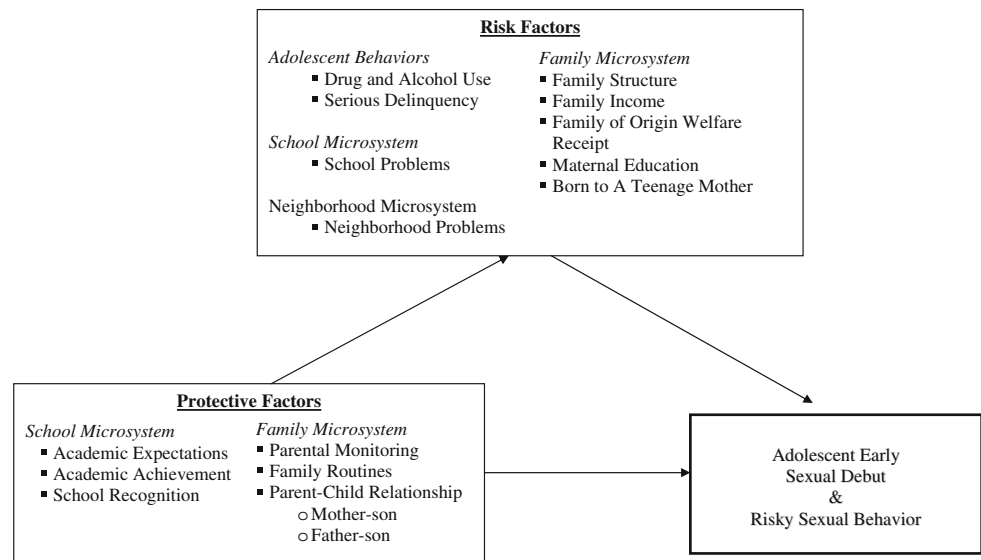
sexual partners (Coker et al. 1994), *risky sexual behavior* is defined as the number of sexual partners an adolescent boy has had, the frequency of his sexual intercourse experiences, and how often he engaged in unprotected sex in the past year.

## Theoretical Framework

Bronfenbrenner's bioecological theory and a risk and resiliency perspective were employed to examine the protective and risk processes associated with rates of early adolescent boys' sexual debut and risky sexual behaviors (Bronfenbrenner 1989; Rutter 1987). See Fig. 1 for an illustration of the proposed factors and relationships. The macro bioecological theory details the development of adolescents within a set of overlapping multifaceted environmental systems that influence their development. We address the adolescents' behaviors as well as characteristics of three microsystems: the family, school, and neighborhood. To frame characteristics of these three systems, a resiliency perspective (Luster and Small 1994; Small and Luster 1994) was used to define system characteristics as protective or risk factors that are associated with rates of early sexual debut and risky sexual behaviors for adolescents. A resiliency approach suggests that there are several paths to which early sexual debut and risky sexual behaviors can develop, and it is imperative to investigate multiple pathways because it is not likely that only one reason is contributing to these sexual behaviors. Thus, protective and risk factors are first addressed independently and then simultaneously in models predicting early sexual debut and risky sexual behaviors during early adolescence to test for indirect relationships.

Indeed, a host of individual behaviors as well as school and family microsystem factors have been related to early sexual debut and risky sexual behaviors (for a systematic review see Buhi and Goodson 2007 or Smith et al. 2005). In this study, we assess the school protective factors of: academic achievement, academic expectations, and school recognition. Sexually inactive adolescent boys are more interested in school, have higher academic success, and greater educational expectations than sexually active adolescent boys and girls (Brooke et al. 1994; Davis and Friel 2001; Donovan and Jessor 1985; Fortste and Hass 2002; Metzler et al. 1992; Pedersen and Seidman 2004; Schvaneveldt et al. 2001; Thornberry et al. 1997). In addition, the family microsystem characteristics of mother-son and father-son relationship quality (Huebner and Howell 2003; Karofsky et al. 2000; Ream and Savin-Williams 2005; Rose et al. 2005), parental monitoring (Capaldi et al. 1996; Rose et al. 2005) and family routines (Capaldi et al. 1996; Perkins et al. 1998) have all been shown to act as protective agents in reducing these risky sexual behaviors.

**Fig. 1** Protective and risk factors associated with early sexual debut and risky sexual behavior of adolescent males



We also addressed adolescent, family, school, and neighborhood characteristics that act as risk agents and increase an adolescent’s odds of early sexual debut and risky sexual behavior (for a systematic review see Buhi and Goodson 2007 or Smith et al. 2005). These include adolescents’ serious delinquency, as well as drug and alcohol use and school truancy or problems (Rosenbaum and Kandel 1990; Thornberry et al. 1997; Whitbeck et al. 1999). In addition, multiple dimensions of the family system were considered risks, including family structure (Chewning and Van Koningsveld 1998; Santelli et al. 2000), low monthly family income (Baumer and South 2001; Miller et al. 1999), family of origin welfare receipt (Hao and Cherlin 2004), low levels of maternal education (Goodson et al. 1997; Rose et al. 2005) and being born to a teenage mother (Furstenberg et al. 1987). Finally, poor neighborhood quality (Brewster et al. 1993; Roche et al. 2005) has also been linked to these behaviors.

**Research Questions**

In sum, numerous risk and protective factors are examined to understand how they may increase or decrease the odds of adolescent boys’ participation in early sexual intercourse and risky sexual behaviors (See Fig. 1). In recent years, however, several converging lines of evidence suggest that the etiology of sexual debut and risky sexual behaviors in early adolescence is a complex phenomenon and that there are multiple pathways for indentifying predictors of these behaviors (Buhi and Goodson 2007; Rose et al. 2005). However, little work has had the ability to study risk and protective factors simultaneously or assess the indirect effects one may have on another (Lynch 2001; Smith et al. 2005). Thus, we test a meditational model (Baron and

Kenny 1986; Holmbeck 1997, 2002) to assess if protective factors have an indirect effect on sexual debut and risky sexual behaviors by reducing adolescents’ risk factors. Moreover, this study is unique because few have been developed within the context of a theoretical framework and few have combined these multiple protective and risk factors together in one study. The availability of a significantly large, longitudinal and multimethodological dataset from a random sample of low-income urban families also strengthens our ability to combine risk and protective factors into one analysis. In addition, we were able to address these relationships longitudinally and for an especially high-risk sample of youth—young adolescent boys living in urban poverty. This study provides new information about these complex relations through three research questions:

1. What characteristics of the individual, family, school, and neighborhood protect low-income adolescent boys from early sexual debut and risky sexual behaviors?
2. What characteristics of the individual, family, school, and neighborhood place low-income adolescent boys at an increased risk of early sexual debut and engaging in risky sexual behaviors?
3. Taken together, do risk factors mediate the relationship between protective factors and early sexual debut and risky sexual behaviors for low-income adolescent boys?

**Methods**

**Sample**

The data for this study were drawn from the first and second waves of the survey component of the *Welfare*,

*Children, and Families: A Three-City Study.* This is a household-based, multimethod, longitudinal study that consists of survey, observational, and direct assessment data. A sample of over 2,000 low-income children and their mothers in low-income neighborhoods were stratified and randomly selected in Boston, Chicago, and San Antonio in 1999. Professional, skilled interviewers screened over 40,000 households, with a 90% response rate, to select eligible families who had a child between the ages of 0–4 or 10–14 years old, with a woman as the primary caregiver (90% biological mothers). Of all eligible families, 82.5% agreed to participate in the study, resulting in an overall response rate of 74%. Approximately 88% of these families completed the second wave of interviews, an average of 16 months later.

A nearly equal number of families participated in each of the three cities. The sample from each of the three cities is predominately African American and Hispanic with a smaller percentage of white families, except in San Antonio where no white families were recruited. See Winston and colleagues (1999) for a detailed account of the survey design. Based on the sampling plan, the sample is representative of families living in low-income neighborhoods in Boston, Chicago, and San Antonio with children ages 0–4 or 10–14 years. These analyses focus on households that had a male focal child, age 10–14 years at Wave 1 in 1999 (W1) and who also participated in Wave 2 in 2001 (W2;  $N = 528$ ).

By wave 2, 28% of the adolescent boys in the *Three-City Study* were sexually active while just over 65% of those boys were engaging in risky sexual behaviors. These boys were on average 11.7 years at W1 and 12.9 year at W2 and ranged from grade 5 to grade 10 in school over the two waves of data collection. The average age of first sexual intercourse was just over 12 years. The adolescents were predominantly African American (41.3%) and Hispanic (48.3%) and 82% of them lived in single parent households. The majority lived below the poverty line with an average household monthly income of \$1,304. Just over 75% of these adolescents had been on welfare at some point in time. Nearly one-quarter of the boys were born to teen mothers (22.6%) and the majority of the mothers did not have an education beyond high school (83%). The mean age of these mothers at W2 was 38 years.

## Procedure

Of the eligible households, interviewers selected one focal child to participate in interviews along with their mothers. Adolescents were interviewed separately from the primary caregivers for approximately 30 min regarding their social, emotional, and behavioral functioning, schooling, and interactions with their peers and parents. Two-hour

interviews with the mothers were conducted regarding themselves, their families, their households, and their children. A Computer-Assisted Personal Interview (CAPI) was used to administer interviews to the mothers and adolescents in 1999 and 2001. Additionally, the Automated Computer-Assisted Survey Interview (ACASI) was used during potentially sensitive questions, such as sex and pregnancy or alcohol and drug use.

## Measures

*Adolescent Sexual Experiences.* At each wave, adolescents were asked 25 questions to gather information about their past and present sexual experiences, unprotected sex and pregnancy. *Early sexual debut* was measured at wave 2 based on responses to the question ‘Have you ever had sexual intercourse? (e.g., “having sex”, “making love” or “going all the way”). Utilizing the adolescent’s age in months at wave 2 as well as the question, “How old were you the first time you had sexual intercourse?” a dummy variable, with a value of 1 indicating “sexually active before age 15” and a value of 0 indicating “not sexually active by age 15” was created. The cut of 15 years was chosen given the social and psychological differences in experiences and outcomes related to sexual experiences prior to this age (Albert et al 2003). Only 11 of the 158 sexually active boys had had sex for the first time at 15 years or older. They were not included in these analyses nor were adolescents who reported that their first sexual experience was not voluntary.

A summed composite of *risky sexual behaviors* was computed for both waves of the survey separately. These variables were utilized to assess changes in risky sexual behaviors over time, with W1 used as a covariate to predict adolescent boys’ risky sexual behaviors at W2. These composites were comprised of three items: (1) “How many different partners have you had sexual intercourse with within the past 12 months?”; (2) “About how many times have you had sexual intercourse in the past 12 months?”; and (3) “When you had sexual intercourse in the past 12 months, how often did you or your partner have unprotected sex without using any type or method of birth control?” All adolescent boys who were not sexually active were recoded as zero on the risky sexual behavior scales, while adolescents’ engaging in these behaviors received a standardized summed score of the three aforementioned questions.

## Protective Factors

*Academic Expectations, Achievement, and School Recognition.* Adolescents’ *academic expectations* were measured by asking them how far they expected to go in school on a scale from 1 (not finish high school) to 7 (go to a

professional school after college such as law or medical school). Adolescents' reports of grades received in school at W1 were used to measure *academic achievement* using a scale of 1 (A's) to 5 (F's). *School recognition* at W1 was assessed by summing four items that asked whether, within the past year, adolescents had been recognized by the school for involvement in school clubs, school grades or performance, awards for sports, or played on any sports teams.

**Parental Monitoring.** Adolescents were asked a series of questions regarding curfew, mothers' awareness of friendships, mothers' knowledge of location of the adolescent when away from the mother, and mothers' knowledge of how free time and money were spent (Steinberg et al. 1991). Using information from W1, an average composite score of nine items was created; higher scores reflect more parental monitoring ( $\alpha = .66$ ).

**Family Routines.** A modified 5-item version of the Family Routines Inventory was completed by the mothers to assess strength-promoting family routines (Jensen et al. 1983). The mean of all items was used to create the family routines composite score from W1 with larger scores indicating more frequent use of family routines ( $\alpha = .68$ ).

**Parent–Son Relationship Quality.** The Inventory of Parent and Peer Attachment (Armsden and Greenberg 1987) was completed by the adolescents. This 12-item inventory assessed feelings of warmth, trust and communication, and anger and alienation. A composite score representing mother–son relationship quality at W1 was calculated by reverse coding six items and creating a mean of all the items with higher scores representing greater relationship quality ( $\alpha = .72$ ). The father–son composite was created in the same manner ( $\alpha = .68$ ).

### Risk Factors

**Delinquency.** Engagement in problem behaviors was reported by the adolescents using 17 items adapted from the National Longitudinal Study of Youth and the Youth Deviance Scale (Borus et al. 1982; Gold 1970; Steinberg et al. 1991). Questions were averaged to assess *serious delinquency* (six items,  $\alpha = .65$ ); *school problems* (five items,  $\alpha = .61$ ); and *alcohol and drug use* (five items,  $\alpha = .65$ ) within the past year, respectively.

**Demographics.** Three variables were created to represent *adolescent race*—White (0 = reference group, RG), Hispanic, and African American. In addition, three dummy coded variables were created to represent *family structure* at W1: single (0 = RG), cohabiting, and married. *Maternal education* dummy variables are: less than high school education (RG), high school diploma, and more than a high school education. Mothers were asked questions regarding how much income they received last month from all

sources. The sum of the income items was totaled to create a composite score of *monthly family income* at W1. A dummy variable was created if the adolescent was *born to a teenage mother* before age 18. These four constructs were considered risk factors.

**Neighborhood Environment.** The mothers' perceptions of problematic characteristics of their neighborhoods at W1 were assessed using 11 summed items (Sampson et al. 1997). Some of these problematic characteristics included high unemployment, unsafe streets, lack of social control, lack of cohesion and trust, and abandoned houses ( $\alpha = .88$ ).

**Family Welfare Receipt.** Welfare experiences were obtained for the 24 months prior to the interview, using a calendar format. Mother's welfare status was coded into four variables: currently receiving welfare (RG), received welfare in the last 2 years but not now, received welfare sometime in their life but not now or in the past 2 years, and has never received welfare.

### Data Analysis Plan

To answer the three research questions, a series of d-probit and lagged OLS multiple regression techniques were employed. First, protective factors from W1 were addressed independently, followed by an independent assessment of risk factors from W1. Second, an additive protective and risk model was estimated. Next, the indirect pathways in this model were tested using the traditional causal steps approach for identifying mediation processes (Baron and Kenny 1986; Holmbeck 1997, 2002). Finally, to provide a direct hypothesis test of mediation, Sobel and Goodman's tests of indirect effects were calculated (Sobel 1982; Goodman 1960). All analyses were conducted in STATA 10.0.

## Results

### Multivariate Analyses

**Early Sexual Debut.** The results of the d-probit regressions are presented in Table 1. In Model 1, protective factors were addressed independently including academic expectations, academic achievement, and school recognition as well as parental monitoring, family routines, mother–child relationship and father–child relationship. These protective factors accounted for a significant amount of variance for early sexual debut (pseudo  $R^2 = 0.08$ , LR = 48.87,  $p < .001$ ). More specifically, as adolescent boys' academic achievement increased at W1 the probability of the boys' engaging in early sexual intercourse decreased ( $dF/dx = -.07$ ,  $p < .01$ ). Parental monitoring at W1 also decreased the probability of adolescent boys' engaging in early sexual

**Table 1** D-probit models predicting adolescent boys' early sexual debut

	Early sexual debut					
	Model 1		Model 2		Model 3	
	Protective model		Risk model		Additive model	
	dF/dx	Robust standard errors	dF/dx	Robust standard errors	dF/dx	Robust standard errors
<i>Demographics</i>						
Adolescent race						
White (omitted)						
Hispanic	0.05	0.08	0.11	0.08	0.10	0.08
African American	0.15 <sup>†</sup>	0.08	0.21*	0.08	0.20*	0.08
<i>Protective factors, Wave 1</i>						
Academic expectations	0.03	0.02			0.03	0.02
Academic achievement	−0.07**	0.02			−0.04 <sup>†</sup>	0.03
School recognition	0.03	0.02			0.03	0.02
Parental monitoring	−0.62***	0.17			−0.33 <sup>†</sup>	0.19
Family routines	−0.06	0.03			−0.04	0.03
Mother–son Relationship	0.04	0.04			0.03	0.04
Father–son Relationship	−0.01	0.03			0.01	0.03
<i>Risk Factors, Wave 1</i>						
Drug and alcohol use			0.20**	0.08	0.17*	0.08
Serious delinquency			0.04	0.05	0.02	0.05
School problems			0.16***	0.04	0.13**	0.05
Neighborhood problems			0.01	0.01	0.01	0.01
Family structure						
Single (omitted)						
Married			0.07	0.07	0.08	0.07
Cohabiting			−0.01	0.10	−0.02	0.09
Monthly family income			−0.01	0.01	−0.01	0.01
Family of origin welfare receipt						
Currently on welfare (omitted)						
Welfare in the last two years			0.02	0.06	0.02	0.06
Ever on welfare			−0.03	0.05	−0.03	0.05
Never on welfare			−0.03	0.06	−0.04	0.06
Maternal education						
Less than High School Education (omitted)						
High School Diploma or GED			−0.02	0.05	−0.02	0.05
More than High School Education			0.02	0.07	0.03	0.07
Born to a teenage mother			−0.01	0.05	−0.01	0.05
LR $\chi^2$	48.87***		63.75***		75.88***	
Pseudo $R^2$	0.08		0.10		0.12	

Notes: (1) \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; <sup>†</sup>  $p < .10$ ; and (2) All models control for city of residence and biological relatedness between mother and son

intercourse ( $dF/dx = -.62$ ,  $p < .001$ ). In Model 2, the risk factors were addressed independently (pseudo  $R^2 = .10$ , LR = 63.75,  $p < .001$ ); adolescents' drug and alcohol use and school problems at W1 were found to be significant predictors of early sexual debut. More specifically, as drug and alcohol use and school problems increased at W1, the

probability of adolescent boys' engaging in early sexual intercourse also increased ( $dF/dx = .20$ ,  $p < .01$ ;  $dF/dx = .16$ ,  $p < .001$ ).

Lastly, an additive protective and risk model (Model 3) was estimated for early sexual debut. The protective and risk variables accounted for a significant amount of the

variance (pseudo  $R^2 = .13$ ,  $LR = 82.79$ ,  $p < .001$ ). Similar to Model 2, adolescent alcohol and drug use as well as school problems at W1 were significant in Model 3. Unlike Model 1, academic achievement and parental monitoring fell from a statistically significant level to a trend level in Model 3. The Sobel and Goodman tests addressing these mediating results are detailed below. Finally, across all models, African American boys reported higher rates of early sexual experiences than did Non-Hispanic Whites or Hispanics (i.e., post-hoc  $\chi^2$ ).

*Changes in Risky Sexual Behaviors Over Time.* The subsequent three models tested changes in risky sexual behaviors over time for those boys engaging in sexual intercourse. Specifically, a composite of adolescent boys' risky sexual behaviors at W1 was entered into the models as a covariate to predict adolescent boys' risky sexual behaviors at W2. Kessler and Greenberg (1981) showed that by controlling for the W1 behavior, coefficients on the independent variables in these lagged OLS models are interpreted as the effects of each independent variable on changes in rates of adolescent boys' risky sexual behaviors over time.

In Table 2, Model 1, a significant amount of variance for changes in risky sexual behaviors was accounted for by the protective factors ( $R^2 = 0.32$ ,  $F = 18.22$ ,  $p < .001$ ). More explicitly, a standard deviation increase in parental monitoring at W1 was related to a .08 decrease in engagement in risky sexual behaviors over time ( $p < .05$ ). Increased rates in adolescents' academic achievement at W1 was also related to decreased rates of their risky sexual behaviors over time ( $\beta = -.08$ ,  $p < .05$ ). Next in Model 2, risk factors were addressed independently ( $R^2 = .34$ ,  $F = 14.06$ ,  $p < .001$ ). Consistent with the early sexual debut models, standard deviation increases in alcohol and drug use as well as school problems at W1 were related to a .14 and .10 standard deviation increase in engaging in risky sexual behaviors, respectively ( $\beta = .14$ ,  $p < .001$ ;  $\beta = .10$ ,  $p < .05$ ).

In Model 3, the predictors accounted for a significant amount of variance in risky sexual behaviors over time ( $R^2 = .35$ ,  $F = 10.56$ ,  $p < .001$ ). Adolescent academic achievement and parental monitoring, unlike in Model 1, were not related to risky sexual behaviors over time. Similar to Model 2, adolescents' drug and alcohol use at W1 was associated with risky sexual behaviors over time. However, school problems at W1 fell to a statistically significant trend. Across all models, no differences by adolescents' race were found for changes in risky behaviors.

#### The Mediating Power of Risk Factors

To test whether or not the risk factors were acting as intervening variables, the indirect pathways were analyzed

last. As shown in Model 1 in both Tables 1 and 2, academic achievement and monitoring had significant direct effects on decreasing the odds of early sexual debut and risky sexual behaviors over time. However, in Model 3 these coefficients decreased (33–84%) and are no longer statistically significant. This reduction shows partial mediation. Next, the traditional causal steps for identifying mediation processes were conducted (Baron and Kenny 1986; Holmbeck 1997, 2002). The unstandardized indirect and direct path coefficients are found in Table 3. In the row marked (a), the protective factors of monitoring and academic achievement were linked to lower levels of the significant risk factors—drug and alcohol use and school problems. Furthermore, the Sobel and Goodman tests of these indirect effects showed that the partial mediation noted above is indeed statistically significant. In short, the protective factors of monitoring and academic achievement had an indirect effect on early sexual debut and risky sexual behavior by reducing adolescents' drug and alcohol use and school problems.

#### Discussion

This study strengthens the literature regarding early sexual debut and risky sexual behaviors by simultaneously examining several protective and risk factors of an understudied population—a sample of high-risk low-income early adolescent boys. Approximately 30% of the adolescent boys in the *Three-City Study* engaged in sexual intercourse by age 15. The average age of sexual debut was just over 12 years old. Of these sexually active boys, over half were engaging in risky sexual behaviors. Finally, early parental monitoring and academic achievement were shown to protect boys' early sexual debut and risky sexual behaviors by reducing their delinquent behaviors, specifically early drug and alcohol use and school problems.

#### How Do These Rates of Sexual Experiences Compare to Previous Work

The number of adolescent boys who report that they are sexually experienced in the *Three-City Study* is substantially higher than what previous work suggests is common for this age group. According to Center for Disease Control (1997), 15% of adolescent boys have engaged in sexual intercourse before 15 years of age. Our number is nearly double this statistic. Furthermore, boys in the *Three-City Study* were engaging in sexual intercourse at substantially younger ages. According to the Kaiser Family Foundation (Kaiser Family Foundation 2005), the median age of first sexual intercourse for adolescent boys is 16.9 years old. Furthermore, in our study, 21% of White, 26% of Hispanic,

**Table 2** OLS regressions predicting adolescent boys' risky sexual behaviors over time

	Risky sexual behaviors, wave 2		
	Model 1 Protective model	Model 2 Risk model	Model 3 Additive model
Risky sexual behavior, Wave 1	0.49***	0.47***	0.46***
<i>Demographics</i>			
Adolescent race			
White (omitted)			
Hispanic	-0.06	-0.03	-0.03
African American	0.01	0.04	0.05
<i>Protective factors, Wave 1</i>			
Academic expectations	0.05		0.05
Academic achievement	-0.08*		-0.05
School recognition	-0.03		-0.02
Parental monitoring	-0.08*		-0.01
Family routines	-0.07		-0.05
Mother-son relationship	0.04		0.04
Father-son relationship	-0.03		-0.01
<i>Risk factors, Wave 1</i>			
Drug and alcohol use		0.14***	0.14***
Serious delinquency		0.03	0.03
School problems		0.10*	0.08 <sup>†</sup>
Neighborhood problems		0.04	0.04
Family structure			
Single (omitted)			
Married		-0.03	-0.02
Cohabiting		-0.07	-0.07
Monthly family income		0.02	0.01
Family of origin welfare receipt			
Currently on welfare (omitted)			
Welfare in the last 2 years		0.01	0.01
Ever on welfare		0.01	0.01
Never on welfare		0.02	0.02
Maternal Education			
Less than HS Education (omitted)			
HS diploma or GED		-0.04	-0.03
More than HS education		0.01	0.02
Born to a teenage mother		-0.05	-0.04
<i>F</i> , Prob > <i>F</i>	18.22***	14.06***	10.56***
<i>R</i> <sup>2</sup>	0.32	0.34	0.35

Notes: (1) \*  $p < .05$ ; \*\*\*  $p < .001$ ; <sup>†</sup>  $p < .10$ ; (2) All models control for city of residence and biological relatedness between mother and son.; and (3) Betas or standardized coefficients are reported

and 35% of African American adolescent boys became sexually active by age 15. Previous studies have found that 16% of White, 27% of Hispanic, and 44% of African American adolescent boys are sexually active by age 15 (Child Trends 2003).

The differences in these percentages of adolescent boys engaging in early sexual intercourse and how they vary across racial groups could be explained by the sample used in this study, which was representative of all adolescent boys from families in low-income neighborhoods in

Boston, Chicago, and San Antonio. Adolescent boys living in poverty in high-risk neighborhoods might be more likely to engage in early sexual intercourse when compared to adolescent boys from other income levels in low-risk neighborhoods due to increased environmental risk factors. As the number of risks increase, the more challenging it becomes for adolescent boys to be resilient in their environment, and therefore, they may begin to engage in early sexual debut and risky sexual behaviors at younger ages. Even though our study was able to look at a variety of these



**Table 3** Sobel and Goodman's test of mediation: the mediating power of risk factors

Sexual debut (DV)		Monitoring (IV)		Academic achievement (IV)	
Unstandardized coefficients and standard errors		Mediated by drug and alcohol use		Mediated by school problems	
<i>a</i>	-0.69***	-1.52***	-0.03*	-0.11***	
<i>b</i>	0.19***	0.13**	0.19**	0.13**	
<i>s<sub>a</sub></i>	0.10	0.18	0.01	0.03	
<i>s<sub>b</sub></i>	0.07	0.04	0.07	0.04	
Sobel test	-2.46 ( <i>p</i> = .014)	-2.73 ( <i>p</i> = .006)	-1.83 ( <i>p</i> = .067)	-2.40 ( <i>p</i> = .017)	
Goodman test	-2.49 ( <i>p</i> = .013)	-2.74 ( <i>p</i> = .006)	-1.90 ( <i>p</i> = .057)	-2.44 ( <i>p</i> = .015)	
<i>c</i>	-0.62*** to -0.31†	-0.62*** to -0.33†	-0.06** to -0.04†	-0.06*** to -0.04†	
Percent of total effect ( <i>c</i> ) mediated	50.00	50.00	33.33	33.33	
Risky sexual behavior over time					
Unstandardized coefficients and standard errors		Monitoring (IV)		Academic achievement (IV)	
Mediated by drug and alcohol use		Mediated by school problems		Mediated by drug and alcohol use	
<i>a</i>	-0.64***	-1.45***	-0.03*	-0.11***	
<i>b</i>	1.03**	0.33†	1.03**	0.33†	
<i>s<sub>a</sub></i>	0.10	0.18	0.01	0.03	
<i>s<sub>b</sub></i>	0.31	0.18	0.31	0.18	
Sobel test	-2.95 ( <i>p</i> = .003)	-1.76 ( <i>p</i> = .079)	-1.93 ( <i>p</i> = .053)	-1.66 ( <i>p</i> = .098)	
Goodman test	-2.97 ( <i>p</i> = .003)	-1.77 ( <i>p</i> = .077)	-2.00 ( <i>p</i> = .047)	-1.70 ( <i>p</i> = .090)	
<i>c</i>	-1.44* to -0.23	-1.44* to -0.23	-0.21* to -0.12	-0.28* to -0.12	
Percent of total effect ( <i>c</i> ) mediated	84.02	84.02	42.83	42.83	

Notes: (1) \* *p* < .05; \*\* *p* < .01; \*\*\* *p* < .001; † *p* < .10; (2) All coefficients are unstandardized betas

risk factors and, in turn, reduce issues related to omitted variable bias, no study can completely eliminate this bias.

### Understanding the Mutual Role of Protective and Risk Processes

Beyond these basic descriptive statistics, we sought to understand the characteristics of the individual, school, family, and neighborhood that protect or place adolescent boys at risk for engaging in early sexual debut and risky sexual behaviors. Supporting Bronfenbrenner's bioecological theory and a risk and resiliency perspective, we found that individual behaviors, school functioning, and the family environment were key determinants of these sexual behaviors. First, supporting prior work (Brooke et al. 1994; Davis and Friel 2001; Donovan and Jessor 1985; Metzler et al. 1992; Pedersen and Seidman 2004; Rose et al. 2005; Schvaneveldt et al. 2001; Thornberry et al. 1997) adolescents' academic achievement and parental monitoring protected against early sexual debut and risky sexual behaviors. Next, consistent with previous literature (Rosenbaum and Kandel 1990; Thornberry et al. 1997; Whitbeck et al. 1999), using drugs and alcohol as well as having problems at school placed boys at risk for early sexual debut and engaging in risky sexual behaviors. However, when all of these processes were assessed at once, the protective factors of monitoring and academic achievement had an indirect effect on early sexual debut and risky sexual behavior by reducing an adolescents' drug and alcohol use and school problems. This shows the importance of understanding the complex set of relationships associated with early adolescent sexual behavior. We discuss the implications of these results below.

### Limitations

Several differences between this study and previous works emerged, including many factors that were not shown to be related to the outcome variables of interest. First, none of the social and human capital characteristics proved to be significantly related to early sexual debut and risky sexual behaviors, even though previous studies have consistently shown these relationships (Baumer and South 2001; Goodson et al. 1997; Hao and Cherlin 2004; Miller et al. 1999; Rose et al. 2005). Limiting our findings, our sample excludes middle and upper income families. It may be that the effects of the social and human capital variables are not as strong in the present study since there is little variation in this sample compared to those of previous studies. Second, research has shown that academic expectations (Rosenbaum and Kandel 1990; Thornberry et al. 1997; Whitbeck et al. 1999) reduce the likelihood of early sexual debut and risky sexual behaviors; however, our study did not find this relationship.

The final difference is that numerous researchers (Capaldi et al. 1996; Huebner and Howell, 2003; Karofsky et al. 2000; Zeng and Kosorok 2000; Perkins et al. 1998; Luster et al. 1998; Ream and Savin-Williams 2005; Rose et al. 2005) have found an association between the parent–child relationship and adolescents' sexual behaviors and we did not. However, please note that the dimensions tapped by this measure are only one aspect of a dynamic parent–child relationship. We did find that parent–child relationships matter. Parental monitoring was shown to protect adolescent boys from early sexual debut and engaging in risky sexual behaviors by lowering their early drug and alcohol use and school problems. Despite these limitations, the results are clear and can be applied to parenting education that aims to decrease the number of adolescents who engage in unprotected sex, possibly leading to sexually transmitted diseases, and experiencing a host of other problem behaviors that are associated with early adolescent sexual behaviors.

### Implications and Application

As a society, we struggle with what is the appropriate stance to take on sexual activity during adolescence. Moreover, this struggle becomes greater when we discuss these behaviors for young adolescents. Over the past two decades, scientists, policy makers and health care providers have shown an increasing interest in understanding why adolescents are engaging in sexual intercourse or other risky sexual behaviors at progressively early ages (Albert et al. 2003). Delaying initiation of sexual intercourse in adolescence continues to be a leading indicator in the Healthy People 2010 national health objectives (U.S. Department of Health and Human Services 2007).

This study shows the need to focus this discussion at even younger age groups. Nearly a third of the boys in this high-risk sample had had sexual intercourse prior to age 15 and, more shocking, over half of them were engaging in risky sexual behavior that may place them at risk for many long-term health consequences. This emphasizes the point that intervention and prevention programs must start before middle school or high school (for a review see Moore et al. 1995). Moreover, the family environment is a particularly powerful social context for influencing young adolescents' sexual behaviors. However, our analysis suggests that we need to move beyond simply looking at the family system and address how other systems, such as the school, can play a critical role in the development of early sexual debut and risky sexual behaviors. Specifically, policy makers and educators should help youth pursue achievement and be concerned about those with high rates of problem behaviors at school, such as truancy and disciplinary actions (Lynch 2001).

In sum, understanding how these systems independently and mutually influence sexual development in adolescence will allow providers and educators to develop more effective prevention and intervention programs. Drawing from a bioecological framework, programs should be multisystemic. For example, programs could incorporate parents and provide them with best practices for monitoring their youth so that they may help delay or deter these behaviors at such young ages. In addition, school staff should be aware that school functioning has important ramifications for youth's development beyond academic competence. Utilizing information that details predictors of these behaviors will allow these groups to create more effective prevention and intervention programs. Finally, despite practitioners' best efforts, adolescent boys will continue to have sexual intercourse. Thus, it is imperative that programs go beyond basic informational sessions on sexually transmitted infections and pregnancy talks and prepare youth who choose to be sexually active, to engage in "safe sex". Youth should not only be taught how to properly use methods that decrease the odds of pregnancy and STI's, but they should be provided with the tools necessary to obtain these methods as well. Indeed, others have found these often deemed "socially unacceptable" practices have been welcomed when implemented (Rose et al. 2005).

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## References

- Alan Guttmacher Institute. (2002). *Sexual and reproductive health: Women and men*. Retrieved June 10, 2005, from [http://www.agi-usa.org/pubs/fb\\_10-02.pdf](http://www.agi-usa.org/pubs/fb_10-02.pdf).
- Albert, B., Brown, S., & Flanigan C. (Eds.). (2003). *14 and younger: The sexual behavior of young adolescents*. Washington DC: National Campaign to Prevent Teen Pregnancy.
- Annie E. Casey Foundation. (2005). *When teens have sex: Issues and trends*. Retrieved April 6, 2005, from <http://www.aecf.org/cgi-bin/teen.cgi?DATASET=US>.
- Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, 16, 427–454.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Baumer, E. P., & South, S. J. (2001). Community effect on youth sexual activity. *Journal of Marriage and Family*, 63, 540–554.
- Borus, M. E., Carpenter, S. W., Crowley, J. E., Daymont, T. N., et al. (1982). *Pathways to the future, volume II: A final report on the National Survey of Youth labor market experience in 1980*. Columbus, OH: Center for Human Resource Research, The Ohio State University.
- Brewster, K. L., Billy, J. O., & Grady, W. R. (1993). Social context and adolescent behavior: The impact of community on the transition to sexual activity. *Social Forces*, 71, 713–740.
- Bronfenbrenner, U. (1989). Ecological systems theory. *Annals of Child Development*, 6, 187–249.
- Brooke, J. S., Balka, E. B., Abernathy, T., & Hamburg, B. A. (1994). Sequences of sexual behavior and its relationship to other problem behaviors in African American and Puerto Rican adolescents. *Journal of Genetic Psychology*, 155, 107–114.
- Brooks-Gunn, J., & Paikoff, R. (1997). Sexuality and developmental transitions during adolescence. In J. Schulenberg, J. L. Maggs, & K. Hurrellmann (Eds.), *Health Risks and Developmental Transitions During Adolescence* (pp. 190–219). Cambridge, UK: Cambridge University Press.
- Brown, A. B., & Flanigan, C. (Eds.). (2003). *14 and younger: The sexual behavior of young adolescents (summary)*. Washington, DC: National Campaign to Prevent Teen Pregnancy.
- Buhi, E. R., & Goodson, P. (2007). Predictors of adolescent sexual behavior and intention: A theory-guided systematic review. *Journal of Adolescent Health*, 40, 4–21.
- Capaldi, D. M., Crosby, L., Stoolmiller, M. (1996). Predicting the timing of first sexual intercourse for at risk adolescent males. *Child Development*, 67, 344–359.
- Centers for Disease Control and Prevention Sexually Transmitted Disease Surveillance Report—1996. Atlanta, GA: Centers for Disease Control and Prevention, Division of STD Prevention, September 1997.
- Chapin, J. (2000). Adolescent sex and mass media: A developmental approach. *Adolescence*, 35, 799–811.
- Chewning, B., & Van Koningsveld, R. (1998). Predicting adolescents' initiation of intercourse and contraceptive use. *Journal of Applied Social Psychology*, 28, 1245–1254.
- Child Trends. (2003). Facts at a glance. Retrieved June 26, 2005, from <http://www.childtrends.org/Files/FAAG2003.pdf>.
- Coker, A. L., Richter, D. L., Valois, R. F., McKeown, R. E., Garrison, C. Z., & Vincent, M. L. (1994). Correlates and consequences of early initiation of sexual intercourse. *Journal of School Health*, 64, 372–377.
- Davis, E. C., & Friel, L. V. (2001). Adolescent sexuality: Disentangling the effects of family structure and family context. *Journal of Marriage and the Family*, 63, 669–681.
- Donovan, J. E., & Jessor, R. (1985). Structure of problem behavior in adolescent and young adulthood. *Journal of Consulting and Clinical Psychology*, 53, 890–904.
- Fortste, R., & Hass, D. (2002). The transition of adolescent males to first sexual intercourse: Anticipated or delayed?. *Perspectives on Sexual and Reproductive Health*, 34, 184–190.
- Furstenberg, F. F., Morgan, S. P., Moore, K. A., & Peterson, J. L. (1987). Race differences in the timing of adolescent intercourse. *American Sociological Review*, 52, 511–518.

- Gold, M. (1970). *Delinquent behavior in an American city*. Belmont, CA: Brooks/Cole.
- Goodman, L. A. (1960). On the exact variance of products. *Journal of the American Statistical Association*, *55*, 708–713.
- Goodson, P., Evans, A., & Edmundson, E. (1997). Female adolescents and onset of sexual intercourse: A theory-based review of research from 1984 to 1994. *Journal of Adolescent Health*, *21*, 147–156.
- Guijarro, S., Naranjo, J., Padilla, M., Gutierrez, R., Lammers, C., & Blum, R. W. (1999). Family risk factors associated with adolescent pregnancy: Study of a group of adolescent girls and their families in Ecuador. *Journal of Adolescent Health*, *25*, 166–172.
- Hao, L., & Cherlin, A. J. (2004). Welfare reform and teenage pregnancy, childbirth, and school dropout. *Journal of Marriage and Family*, *66*, 179–194.
- Hanson, S. L., Morrison, D. R., & Ginsburg, A. L. (1989). The antecedents of teenage fatherhood. *Demography*, *26*, 579–596.
- Hogan, D. P., & Kitagawa, E. M. (1985). The impact of social status, family structure, and neighborhood on fertility of black adolescents. *The American Journal of Sociology*, *90*, 825–855.
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting & Clinical Psychology*, *65*, 599–610.
- Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology*, *27*, 87–96.
- Huebner, A. J., & Howell, L. W. (2003). Examining the relationship between adolescent sexual risk-taking and perceptions of monitoring, communication and parenting styles. *Journal of Adolescent Health*, *33*, 71–78.
- Jensen, E. W., James, S. A., Boyce, W. T., & Hartnett, S. A. (1983). The family routines inventory: Development and validation. *Social Science and Medicine*, *17*, 201–211.
- Kaiser Family Foundation. (2005). *U.S. teen sexual activity*. Retrieved June 16, 2005 from <http://www.kff.org/youth/hivstds/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=135221>.
- Kalil, A., & Kunz, J. (1999). First births among unmarried adolescent girls: Risk and protective factors. *Social Work Research*, *23*, 197–208.
- Kalmuss, D., Davidson, A., Cohall, A., Laraque, D., & Casseell, C., (2003). Preventing sexual risk behaviors and pregnancy among teenagers: Linking research and programs. *Perspectives on Sexual and Reproductive Health*, *35*, 87–93.
- Karofsky, P. S., Zeng, L., & Kosorok, M. R. (2000). Relationship between adolescent-parental communication and initiation of first intercourse by adolescents. *Journal of Adolescent Health*, *28*, 41–45.
- Kessler, R., & Greenberg, E. F. (1981). *Linear panel analysis: Models of quantitative change*. New York: Academic Press.
- Kirby, D. (2002). Antecedents of adolescent initiation of sex, contraceptive use, and pregnancy. *American Journal of Health Behavior*, *26*, 473–485.
- Luster, T., & Small, S. A. (1994). Factors associated with sexual risk-taking behaviors among adolescents. *Journal of Marriage and the Family*, *56*, 622–632.
- Lynch, C. O. (2001). Risk and protective factors associated with adolescent sexual activity. *Adolescent & Family Health*, *3*, 99–107.
- Metzler, C. W., Noell, J., & Biglan, A. (1992). The validation of a construct of high-risk sexual behavior in heterosexual adolescents. *Journal of Adolescent Research*, *72*, 233–249.
- Miller, K. S., Forehand, R., & Kotchik, B. A. (1999). Adolescent sexual behavior in two ethnic minority samples: The role of family variables. *Journal of Marriage and the Family*, *61*, 85–98.
- Moore, M. R. (2001). *Family environment and adolescent sexual debut in alternative household structures*. Paper presented at the Annual Meetings of the Population Association of America, Washington, DC.
- Moore, K., Miller, B., Gleib, D., & Morrison, D. (1995). *Adolescent sex, contraception, and childbearing: A review of the recent research*. Washington, DC: Child Trends, Inc.
- Pedersen, S., & Seidman, E. (2004). Team sports achievement and self-esteem development among urban adolescent girls. *Psychology of Women Quarterly*, *28*, 412–422.
- Perkins, D. F., Luster, T., Villarruel, F. A., & Small, S. (1998). An ecological, risk-factor examination of adolescents' sexual activity in three ethnic groups. *Journal of Marriage and the Family*, *60*, 660–673.
- Ream, G. L., & Savin-Williams, R. C. (2005). Reciprocal associations between adolescent sexual activity and quality of youth-parent interactions. *Journal of Family Psychology*, *19*, 171–179.
- Roche, K. M., Mekos, D., Alexander, C. S., Astone, N. M., Bandeen-Roche, K., Ensminger, M. E. (2005) Parenting influences on early sex initiation among adolescents: How neighborhood matters. *Journal of Family Issues*, *26*, 32–54.
- Rose, A., Koo, H. P., Bhaskar, B., Anderson, K., White, B., Jenkins, R. R. (2005). The influence of primary caregivers on the sexual behavior of early adolescents. *Journal of Adolescent Health*, *37*, 135–144.
- Rosenbaum, E., & Kandel, D. B. (1990). Early onset of adolescent sexual behavior and drug involvement. *Journal of Marriage and the Family*, *52*, 783–798.
- Rucibwa, N., Modeste, N., Mongtomery, S., & Fox, C. (2003). Exploring family factors and sexual behaviors in a group of Black and Hispanic adolescent males. *American Journal of Health and Behavior*, *27*, 63–74.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, *57*, 316–331.
- Sampson, R. J., Raudenbush, S., & Fenton, E. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science*, *277*(5328), 918–924.
- Santelli, J. S., Lowry, R., Brener, N. D., & Robin, L. (2000). The association of sexual behaviors with socioeconomic status, family structure, and adolescent race among US adolescents. *American Journal of Public Health*, *90*, 1582–1588.
- Santelli, J. S., Lindberg, L., Abma, J., McNeely, C., & Resnick, M. (2004). Adolescent sexual behavior: Estimates and trends from four nationally representative surveys. *Family Planning Perspectives*, *32*, 156.
- Sarri, R., & Phillips, A. (2004). Health and social services for pregnant and parenting high risk teens. *Children & Youth Services Review*, *26*, 537–560.
- Schvaneveldt, P. L., Miller, B. C., Berry, E. H., & Lee, T. R. (2001). Academic goals, achievement, and age at first sexual intercourse: Longitudinal, bidirectional influences. *Adolescence*, *36*, 767–787.
- Small, S. A., & Luster, T. (1994). Adolescent sexual activity: An ecological, risk-factor approach. *Journal of Marriage and the Family*, *56*, 181–192.
- Smith, L. H., Guthrie, B. J., & Oakley, D. J. (2005). Studying adolescent male sexuality: Where are we? *Journal of Youth and Adolescence*, *34*, 361–377.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 290–312). San Francisco: Jossey-Bass.
- Steinberg, L., Mounts, N. S., Lamborn, S. D., & Dornbusch, S. M. (1991). Authoritative parenting and adolescent adjustment across varied ecological niches. *Journal of Research on Adolescence*, *1*, 19–36.

- Thornberry, T. P., Smith, C. A., & Howard, G. J. (1997). Risk factors for teenage fatherhood. *Journal of Marriage and the Family*, *59*, 505–522.
- United States Centers for Disease Control. (2005). *Youth online: comprehensive results*. Retrieved July 20, 2006, from <http://www.apps.nccd.cdc.gov/yrbss/QuestYearTable.asp?cat=4&Quest=Q60&>.
- U.S. Department of Health and Human Services (2007). *Healthy people 2010*. Retrieved January 15, 2008 from <http://www.healthypeople.gov/default.htm>.
- Ventura, S. J., Mathews, T. J., & Hamilton, B. E. (2002). *Teenage births in the United States: State trends, 1991–2000, an update*. National Vital Statistics Reports; 50(9). Hyattsville, MD: National Center for Health Statistics.
- Whitbeck, L. B., Yoder, K. A., Hoyt, D. R., & Conger, R. D. (1999). Early adolescent sexual activity: A developmental study. *Journal of Marriage and the Family*, *61*, 934–946.
- Winston, P., Angel, R., Burton, L., Chase-Lansdale, P., Cherlin, A., Moffitt, R., & Wilson, W. (1999). *Welfare, children, and families: A three-city study*, Overview and Design Report. Available at <http://www.web.jhu.edu/threecitystudy/images/overviewanddesign.pdf>.

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