



Contents lists available at ScienceDirect

Children and Youth Services Review

journal homepage: www.elsevier.com/locate/chilyouth

A bioecological analysis of risk and protective factors associated with early sexual intercourse of young adolescents

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ARTICLE INFO

Article history:

Received 3 September 2008
Received in revised form 19 May 2009
Accepted 21 May 2009
Available online xxxx

Keywords:

Early sexual intercourse
Low-income
Adolescents
Risks
Protective factors
*Welfare, Children and Families:
A Three-City study*
Policy

ABSTRACT

Microsystem risk and protective factors associated with early sexual intercourse among low-income adolescents were assessed using bioecological theory and a risk and resiliency framework. Waves 1 and 2 of *Welfare, Children and Families: A Three-City Study* were used ($N=984$, 10–14 years). Findings showed age, gender, race, two-parent households, separated households, households where the mother formed a union between waves, transitioning onto welfare between waves, and delinquency increased the odds that adolescents were sexually active. Protective factors for early sexual activity included maternal education and father involvement. Risk factors for early sexual debut were age, gender, race, two-parent households, separated households, and delinquency. A protective factor for early sexual debut was maternal education. Findings differed by gender, race, and race*gender. Policy implications include increasing social and human capital among low-income mothers to promote family stability and providing diversified sexual education programs due to gender differences.

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1. Introduction

The decision to engage in sexual intercourse for the first time is an important transition during adolescence (Brooks-Gunn & 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 before age 14 (Alan Guttmacher Institute, 2002; Davis & Friel, 2001). Early sexual intercourse (before age 16) poses increased health risks to adolescents including increased risk of contracting a sexually transmitted infection or experiencing an unintended pregnancy (Brooks-Gunn & Paikoff, 1997; Davis & Friel, 2001; Miller, Forehand, & Kotchick, 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; Santelli et al., 2004) are at increased risk for early sexual debut and thereby at higher risk for negative health consequences. However, race and gender are not the only factors shown to influence an adolescent's decision to engage in early intercourse; in addition to individual characteristics, facets of the adolescent's environment also affect this critical decision.

Utilizing bioecological theory and a risk and resiliency framework, this study assesses individual characteristics as well as facets of the environment of young adolescents (ages 10 to 14) who are currently sexually active as well as those who transition into sexual intercourse. These terms are referred to throughout the paper as early sexual activity and debut, respectively. For ease, these experiences are collectively termed early sexual intercourse in the literature review. In short, the purpose of this study was two-fold: (1) to identify the risk and protective mechanisms associated with early sexual intercourse in a sample of urban low-income, predominantly minority young adolescents and (2) to examine whether risk and protective factors vary depending on the race and gender of the adolescent.

2. Theoretical framework & literature review

Bronfenbrenner's bioecological theory (Bronfenbrenner, 1979, 1989) in conjunction with a risk and resiliency framework (Friedman & Chase-Lansdale, 2002; Rutter, 1987) was used to frame this study and guide the understanding of the multiple facets that impact adolescents' decisions to engage in sexual intercourse. Specifically, adolescents do not develop in a vacuum, but as the bioecological theory details, development occurs in overlapping systems, which both affect and are affected by the adolescent. Occurrences and attributes of one system, such as the family, affect the other systems, which in turn, affect an adolescent's decisions, behaviors, and outcomes, such as those involved in choosing to become sexually

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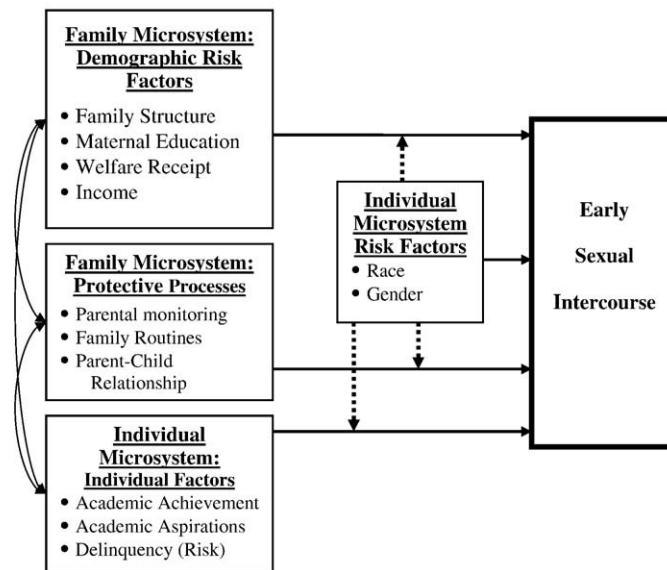


Fig. 1. Risk and protective factors associated with early adolescent sexual intercourse. Notes: As shown by the straight, solid lines in Fig. 1, it was hypothesized that the familial demographic, family processes, individual attributes and demographic characteristics would have a direct relationship on adolescent sexual intercourse. The bidirectional arrows among the individual and family microsystems on the left, represent the interrelatedness of the familial demographics, family processes, and individual attributes, or in other words the mesosystem. As shown by the dotted lines, it was further hypothesized that the relationships between the familial demographic attributes, family processes, and individual attributes and adolescent sexual activity would be different for the adolescent demographic characteristics of race and gender.

active. Fig. 1 illustrates how the various familial demographic risk factors, the family process protective factors, and the individual risk and protective factors fit into the ecological systems model in the present study.

Of specific interest in this study were attributes of the family and individual microsystems and the interactions between them in the mesosystem. A microsystem includes the direct interactions of the adolescent with others (Bronfenbrenner, 1979). Specifically, it contains characteristics of the individual as well as factors within a child's immediate environment (i.e., the family system). These factors directly affect the developing adolescent, and, in turn, may be affected by the adolescent. In this study, two microsystems are addressed – the adolescent and family. The individual level factors of adolescent race, gender, academic achievement, academic aspirations, and engagement in delinquent acts were considered. Furthermore, characteristics of the family microsystem included the familial demographic attributes of family structure, maternal education, welfare receipt, and income as well as the family processes of parental monitoring, family routines, parent–child relationship, and father involvement. The second system, the mesosystem is characterized by the interrelations of two or more microsystems (Bronfenbrenner, 1979). This study addressed how connections between the individual and family microsystem were changed by two characteristics of the adolescent, race and gender.

Moreover, due to the complexity and multidirectional nature of interactions in bioecological theory, a risk and resiliency framework was used to define risk and protective factors associated with sexual intercourse. Risk factors are defined as factors present in the individual or the environment that increase the probability of a negative outcome whereas protective factors are individual or environmental factors associated with positive outcomes in the presence of risk (Compas, 2004). In the present study, the risk factors are African American race, being male, family structure, low maternal education, welfare receipt, income and delinquency whereas the protective factors are family routines, parental monitoring, parent–child relationship quality, father involvement, academic achievement and academic aspirations. When an adolescent has overcome risk, he or she has exhibited *resiliency* or the process of successfully developing

and adapting when faced with multiple risks (Compas; Friedman & Chase-Lansdale, 2002). Rutter (1987) proposed that when the number of risk factors increases, the likelihood of successful adaptation or resiliency decreases. However, the presence of risk factors does not necessarily mean adolescents will have negative outcomes, such as engaging in early sexual acts, and the presence of protective factors does not necessarily mean the adolescent will adapt to his/her environment positively or display a process of resilience (Hamilton & Hamilton, 2004).

Indeed, a vast literature base has documented the relationship between the aforementioned risk and protective factors and how these processes impinge on the decision adolescents' face of whether or not to engage in early intercourse. Some factors serve to inhibit the likelihood an adolescent will engage in early intercourse (*protective factors*), while others exacerbate this likelihood (*risk factors*). For a thorough review of risk and protective factors associated with adolescent sexuality, see Kirby, 2007. Of interest to this specific study were the risk factors of living in a single-parent household (Cooksey, Rindfuss, & Guilkey, 1996; Moore & Chase-Lansdale, 2001), living with a mother who has a low level of formal education (Miller, Benson, & Galbraith, 2001; Santelli, Lowry, Brener, & Robin, 2000), living in a family receiving welfare (Harris, Duncan, & Boisjoly, 2002), growing up in a low-income household (Blum et al., 2000; Lammers, Ireland, Resnick, & Blum, 1999; Miller et al., 2001) and being involved in delinquent acts (Coker, Richter, McKeown, Garrison, & Vincent, 1994). In combination with assessing the named risk factors, this study also examined the documented protective factors of parental monitoring (Borawski, Ievers-Landis, Lovergreen, & Trapl, 2003), the presence of family routines (Loukas & Prelow, 2004), high quality parent–child relationships (Karofsky, Zeng, & Kosorok, 2000), father involvement (Day, 1992), and high levels of academic achievement and aspirations (Lammers et al., 1999).

Thus, it was expected in this study that adolescents who engaged in early sexual activity or experienced early sexual debut would be more likely to live in a single-parent family, have a mother with a low level of formal education, live in a family receiving welfare, have low family income, and have higher rates of delinquent involvement.

Furthermore, adolescents who were not sexually active would have higher levels of parental monitoring, family routines, and parent–child relationship quality (mother and father), and father involvement as well as have higher grade point averages and higher academic aspirations. Following is a review of the literature outlining these risk and protective factors.

Over the past three decades the American family has undergone dramatic changes such as lower marriage rates among African American women, a divorce rate of almost 50% among all Americans, and an increase in non-traditional two-parent homes — i.e. cohabiting (Teachman, Tedrow, & Crowder, 2000). As Bumpass and Raley (1995) noted, these shifts have created differences among the conglomeration of household types that make-up single-parent homes. Thus, Bumpass and Raley suggested further division of single-parent homes is warranted. Certainly, single-never married and single-divorced/separated are both single-parent households; however, each unique household type encompasses potentially different family dynamics and processes. Indeed, several researchers have supported this claim with regard to adolescent sexual intercourse noting that it is not single-parent status per se that is a risk factor, but instead family transitions or disruptions commonly associated with single-parent-hood (Capaldi, Crosby, & Stoolmiller, 1996; Miller et al., 1997; Wu & Thomson, 2001). These findings show that parental separations and repartnerings are linked with adolescents' sexual debut rather than the actual family structure or composition of the family. During times of separation and repartnering, periods of instability are more likely to occur, in turn, potentially putting adolescents at increased risk for engagement in sexual intercourse. Thus, it was expected that adolescents living in stably separated homes or in homes where the mother formed a union or experienced a union dissolution between waves would have a higher likelihood of being sexual active or experiencing sexual debut than those in stably single and stably two-parent households.

Moreover, bouts of instability may not only occur when transitions in family structure take place, but also during other critical life transitions, such as when families transition onto or off welfare or experience a significant loss of income. Previous work by Chase-Lansdale et al. (2003) assessed the transitions from welfare to work and found adolescents whose mothers transitioned off welfare had increased reading skills and decreased drug and alcohol use. However, it is important to note it may not be the *transition onto welfare* per se, but that this transition in the household was stressful for family members, thus disrupting the household stability and in turn leading to increased risk for negative adolescent behaviors. In the present study, it was thought that adolescents whose families had stable non-welfare use would have lower rates of sexual activity and debut than those in families on either welfare or who transitioned off or on welfare.

Along with transitions in family structure and welfare receipt, periods of significant income loss might also affect adolescent sexual activity. In a review of family poverty, welfare reform and child development, Duncan and Brooks-Gunn (2000) note that researchers have found income loss and economic uncertainty to be related to negative emotional and school outcomes for teens. Duncan, Yeung, Brooks-Gunn, and Smith (1998) found strong associations between family income increases and achievement related outcomes. These researchers did test whether income transitions had effects on nonmarital childbearing, which turned out to be insignificant, but they did not test whether income transitions affected sexual activity. Thus, this study sought to determine if changes in income among already low-income families had any bearing on early sexual activity. It was thought that adolescents in homes that experience a loss of income would be more likely to engage in early sexual intercourse than those who experience a gain in income because a loss of income would result in periods of negative transition and instability.

In line with the studies already discussed, Adam (2004) reported that family instability had negative consequences for adolescents' cognitive, emotional, academic, educational and behavioral outcomes. Although Adam's study assessed the consequences of instability with regard to adolescent separation from a parent and residential moves, it is likely instability in other facets of family life could also contribute to developmental outcomes, such as the successful avoidance of early sexual intercourse. For example, studies have documented that maternal education inhibits adolescents' risk of early sexual debut (Miller et al., 2001; Santelli et al., 2000). It was subsequently thought that increases in maternal education, although causing transitions and potential instability in the home would inhibit sexual intercourse among young adolescents, rather than expediting sexual debut such as transitions in family structure, welfare receipt and loss in family income would.

Taken together, the overall goal of this study was to estimate simultaneously the risk and protective factors associated with early sexual activity and debut. Finally, investigations show that these relationships may be moderated by adolescent race and gender (Davis & Friel, 2001; Miller et al., 1997; Moore, 2001; Wu & Thomson, 2001); therefore analyses were performed separately by gender, race (African American and Hispanic) and race*gender (excluding White boys and girls). Based on a review of the literature and guided by bioecological theory and a risk and resiliency paradigm, the following research questions were posed: (1) Are there age, gender and racial differences in rates of early sexual intercourse?; (2) Taken together, what family characteristics, family processes and individual characteristics increase or decrease an adolescent's propensity for engaging in sexual intercourse?; and (3) Do these relationships vary by the race/ethnicity or gender of the adolescent?

3. Method

3.1. Sample and procedure

The first and second waves of data from the family survey component of *Welfare, Children, and Families: A Three-City Study* were utilized. The *Three-City Study* is a household-based, stratified random-sample of over 2000 low-income children and their caregivers in low-income neighborhoods in Boston, Chicago, and San Antonio. In 1999, over 40,000 households in randomly selected neighborhoods with poverty rates of at least 40% were screened. A screening interviewer visited each home to determine whether four eligibility conditions were met: whether there was an eligible child in the household (a child aged 0–4 or 10–14), whether the household had income less than twice the poverty line, whether the primary caregiver of the child was female, and whether the household head was non-Hispanic white, non-Hispanic black, or Hispanic. Of the randomly selected eligible families, 83% agreed to participate in the study, resulting in response rate of 75%. Interviewers then randomly selected one focal child per family and invited the focal child (aged birth to 4 years or 10 to 14 years) and his or her primary female caregiver, referred to as “mother” here, to participate. On average, 16 months lapsed between the two interviews and 88% of the families agreed to participate in the study again. For a more detailed review of the study design and sample, please see Winston et al. (1999).

This study focused on households that had an adolescent child, age 10 to 14 years at Wave 1, who completed surveys and interviews in Wave 2 ($n = 984$). Attrition analyses revealed that adolescents who participated in Wave 1 but did not participate in Wave 2 did not vary on any of the key study constructs in comparison to adolescents who participated at both waves. The youth were ages 10 to 14 years in Wave 1 and 11 to 16 years in Wave 2. In general, adolescents' 30-minute interviews asked about their social, emotional, and behavioral functioning, schooling, and interactions with their peers and parents.

At each data collection period, mothers participated in two-hour interviews separate from their adolescents, which asked questions about themselves, their families, households, and children. When answering sensitive questions like those related to sexuality and drug and alcohol use, adolescents and mothers used Automated Computer Assisted Survey Instrument (ACASI; Turner et al., 1997).

3.2. Measures

3.2.1. Adolescent sexual intercourse

At each wave of the survey, adolescents answered a yes–no question: “Have you ever had sexual intercourse?” with sexual intercourse defined as “making love” or “going all the way.” A dummy variable with 1 representing *sexually active* by Wave 2 and 0 representing not sexually active by Wave 2 was created. Of the 984 adolescents, 254 were sexually active by Wave 2. A second dummy variable was created to represent *sexual debut*. A value of 1 represents adolescents who had not engaged in sexual intercourse at Wave 1 but had engaged in sexual intercourse by Wave 2, and a 0 represents adolescents who had never engaged in intercourse by Wave 2. Adolescents who were sexually active by Wave 1 were not included in the analyses assessing sexual debut. Adolescents whose first sexual experience was involuntary (e.g., sexual abuse, date rape) were also excluded from analyses. Table 1 provides a descriptive overview of sexual intercourse, activity and debut, by adolescent race and gender.

3.2.2. Demographics

Three dummy coded variables were created to represent *adolescent race*: Non-Hispanic White (10.4%), African American (41.9%: referent group), and Hispanic (47.8%). A single question asked the *adolescents' gender* (47.8%: males = 1). Finally, descriptive tests revealed a jump in sexual activity at age 13. Specifically, 43% of adolescents age 13 years and older have had sexual intercourse by Wave 2 compared to only 15% of adolescents age 12 and under ($t(628.74) = -9.35, p < .001$) thus a dummy variable representing *adolescent age* was created with 1 representing adolescents 10 to 12 years old coded as the referent group (61.4%).

3.2.3. Demographic risk factors

Four demographic risk factors were included in these analyses. First, a five-category variable was created to represent *family structure* between Wave 1 and Wave 2: stably single (56.8%); stably two-parent (12.4%); stably separated (14.3%); moved into a union (12.1%); or

experienced a dissolution (4.4%). Second, *maternal education* was assessed across the first two waves with the categories: stable less than high school (referent group), stable high school/GED, stable technical degree or higher, and increased education between waves. Third, using a calendar format, family welfare receipt was gathered for 24 months prior to the first interview. Variables were created using only the 11 months prior being that this would decrease recall bias and also because this was the shortest time span between Waves 1 and 2 (Chase-Lansdale et al., 2003). A categorical variable was created representing *welfare receipt*: stable welfare (on welfare at Waves 1 and 2, 21.1%), transitioned onto welfare (off welfare Wave 1, on welfare Wave 2: 4.5%), transitioned off welfare (on welfare Wave 1, off welfare Wave 2: 14.5%), and never on welfare – referent group (off welfare both waves: 59.9%). Fourth, the sum of *family income* during Wave 1 was used. Information on family income was collected by asking the mother for her previous month's income before taxes and deduction and the source of the income. Income sources included unemployment insurance, food stamps, SSI, cash welfare income, child support payments, social security disability, worker's compensation/other disability, social security retirement or survivor payments, other pension or retirement income, income from relatives, income from friends, and any other source of income.

3.2.4. Familial protective processes

A mean composite score for *parental monitoring* at Wave 1 was assessed through a series of questions assessing adolescents' perceptions about curfew, as well as the caregivers' knowledge of friends, after-school and nightly whereabouts, and how the adolescent spends free time and money ($\alpha = .66$). Next, a Wave 1 mean composite score of five items from the Family Routines Inventory was completed by mothers to assess *family routines* (Jensen, James, Boyce, & Hartnett, 1983; $\alpha = .68$). In addition, adolescents completed the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987). The 12-item inventory assessed various facets of the mother–adolescent and father–adolescent relationship such as feelings of trust and communication, warmth and connectedness, and anger and alienation. For the mother–child relationship, a Wave 1 mean composite score was created by reverse coding six negative items with higher values representing higher levels of *mother–child relationship quality* ($\alpha = .72$). To assess the father–adolescent relationship, two sub-scales were utilized to capture *father–child anger and alienation* ($\alpha = .66$) as well as *father–child trust and communication* ($\alpha = .90$). Finally, adolescents and mothers reported on *father involvement* in Wave 1 ($r = .41; p < .000$). To reduce shared method variance, the current study utilized a mean composite of father involvement as reported by the mothers ($\alpha = .96$).

3.2.5. Individual factors

Mothers' and adolescents' reports of adolescent grades received in school, using a scale of 5 (mostly A's) to 1 (mostly F's), was used to measure *academic achievement*; this was subsequently recoded into the standard 4-point grade scale (A = 4.0 to F = 0.00). Mothers' and adolescents' reports of grades were positively related ($r = .77, p < .001$). The current study utilized adolescents' reports. Please note, that the regression analyses were also analyzed with maternal reports of adolescent's academic achievement and the patterns of results did not change. A second construct was used to measure *academic aspirations*, using the question: “How far do you expect to get in school?” (with responses 1 = not finish high school to 7 = go to a professional school after college such as law or medical school). Finally, adolescents reported their engagement in *delinquent behaviors* by answering a series of 17 questions adapted from The National Longitudinal Study of Youth (NLSY; Borus et al., 1982) and the Youth Deviance Scale (Gold, 1970; used by Steinberg, Mounts, Lamborn, & Dornbusch, 1991). The total delinquency scale reflects overall involvement in delinquent acts, excluding five items on school

Table 1
Sexual activity and debut by race*gender.

	Sexually active	Sexual debut
Gender		
Males	148	95
Females	106	72
Race		
White/Other	17	12
African American	120	72
Hispanic	117	83
Race*gender		
Males		
White	12	9
African American	74	42
Hispanic	62	44
Females		
White	5	3
African American	46	30
Hispanic	55	39
Total sexually active adolescents	254	167
Total adolescents	984	897

delinquency (12 items; $\alpha = .71$). The scale was standardized, averaged, and logged for all items.

4. Results

The current study assessed the risk and protective factors associated with early adolescent sexual activity and transition into sexual debut for a sample of low-income, predominately minority adolescents. Presented analyses include a series of logistic regression models to assess the associations among the risk and protective factors and early sexual activity and debut. One aim of this study was to assess variations by gender and race in the associations between the risk and protective factors and adolescent sexual debut and transitions into sexual activity. Therefore, the final model was tested for all adolescents simultaneously as well as run separately by gender, race (only Hispanic and African American) and race by gender (only Hispanic and African American girls and boys; regression analyses were not conducted separately for White youth due to limited sample sizes).

By Wave 2 of the *Three-City Study*, 25.8% ($n = 254$) of adolescents had experienced sexual intercourse while 17.0% ($n = 167$) of the adolescents experienced their sexual debut between Waves 1 and 2. Adolescents who reported sexual activity or debut, reported their age at first sexual intercourse. The average age was 12.77 years. Boys reported younger ages of first sexual intercourse ($M = 12.48$) than girls ($M = 13.16$, $t(251.98) = -3.88$, $p < .001$). For those who experienced sexual debut, nearly twice as many older adolescents transitioned compared to younger adolescents ($t(486.20) = -6.40$, $p < .001$). Boys had higher rates of sexual intercourse, nearly ten percent higher, than girls' rates ($t(934.33) = 3.89$, $p < .001$). They were also more likely to experience sexual debut between the waves with 20% of boys transitioning into intercourse compared to only 14% of girls ($t(821.76) = 2.96$, $p < .01$). Furthermore, racial differences in rates of early sexual intercourse were found in that African Americans had rates of intercourse 12 percentage points higher than Whites (29% and 17% respectively; $F(2, 981) = 3.53$, $p < .05$); however, racial differences did not occur for sexual debut. Thus, Research Question 1 which assessed differences in sexual activity based on age, gender and race was partially supported.

The multivariate logistic results for Research Question 2 revealed in **Table 2** that the odds of having sexual intercourse rise 75% for older adolescents than for younger adolescents and 50% for males instead of females. The odds of having sexual intercourse were also higher for those youth who lived in San Antonio compared to Boston. Racial differences also emerged in that the odds of African Americans having sexual intercourse were higher than White or Hispanic adolescents' odds. Moreover, Hispanics had higher odds than White youth. The results shown in the third column of **Table 2** also support the assumptions of Research Question 1 that older adolescents, boys, and African American adolescents had higher odds of experiencing sexual debut than younger adolescents, girls and White adolescents, respectively.

The multivariate logistic results supported the family structure instability assumption in that compared to those who lived in a stably single-parent household, adolescents in stably separated households and adolescents in households where the mother formed a union between waves had higher odds of engaging in sexual intercourse. Furthermore, results show that living in a stably two-parent home, a stably separated home, or a home where the mother formed a union between waves compared to living in a home where the mother experienced a dissolution between waves also increased the odds of engaging in sexual activity. Moreover, results supported the assumption that living in a stably separated home posed a significant risk factor for sexual debut compared with those living in a stably single home. Counterintuitive to assumptions, results revealed adolescents living in homes where the mother

Table 2
Logistic and probit regressions predicting sexual activity.

	Sexual activity ($n = 984$)		Sexual debut ($n = 897$)	
	Logistic regression odds ratio		Logistic regression odds ratio	
	Final model	Post hoc	Final model	Post hoc
<i>Adolescent demographics</i>				
Age (older omitted)	.23***		.26***	
Female (males omitted)	.47***		.50***	
<i>City (Chicago omitted)^A</i>				
Boston ^B	1.08		1.14	
San Antonio ^C	1.70*	C > B*	1.90*	C > B*
<i>Race</i>				
African American (omitted) ^A				
White ^B	.37**		.46*	
Hispanic ^C	.61**	C > B*	.72	
<i>Familial demographics</i>				
<i>Family structure</i>				
Stable single (omitted) ^A				
Stable two-parent ^B	2.45**	B > E**	2.15*	B > E*
Stable separated ^C	2.05**	C > E**	2.04**	C > E*
Into union ^D	1.72*		1.40	
Out of union ^E	.49	D > E*	.41	
<i>Maternal education</i>				
Less than high school (omitted) ^A				
High school/GED ^B	1.02	B > C*	1.09	
Tech or higher ^C	.40*		.31*	B > C**
Increased education ^D	.64		.39*	B > D**
<i>Welfare status</i>				
Stable on welfare ^A	1.32		1.30	
Trans on Welfare ^B	2.33*		1.57	
Trans off welfare ^C	1.45		2.13	
Stable off welfare(omitted) ^D				
Income	0.99		1.00	
<i>Family processes</i>				
Family routines	.91		.87	
Father involvement	.77*		.84	
Mother-child relationship	1.11		.98	
Parental monitoring	.33		.54	
Father-child trust and communication	.96		1.02	
Father child anger and alienation	1.05		1.11	
<i>Individual attributes</i>				
Academic achievement	.85		.83	
Academic aspirations	1.08		1.13	
Delinquency	4.88***		2.20*	
LR chi-square	228.92***		125.91***	
Pseudo R ²	.20		.15	

Notes: *** $p < .001$; ** $p < .01$; * $p < .05$.

experienced a dissolution between waves had a lower risk of sexual debut compared to those in stably separated homes and those living in stably two-parent homes. Finally, results disputed the assumption that two-parent homes were protective of sexual intercourse and sexual debut due to the finding that adolescents in these homes had higher odds of having sexual intercourse and debut than those in stably single-parent homes.

Additional support for the protective nature maternal education has on adolescent sexual activity was found in that adolescents with mothers who held a technical degree or higher decreased the chances of early sexual activity by more than half when compared to mothers with less than a high school or only a high school degree. Maternal education also inhibited sexual debut in that adolescents who lived in homes where the mother had a technical degree or higher or increased education between waves in comparison to adolescents who lived in homes where the mother had less than a high school degree or only a high school degree. Multivariate results

Table 3
Logistic regressions predicting sexual activity by gender and race.

Sexual activity	Logistic odds ratios			
	Boys (n = 470)	Girls (n = 514)	African Americans (n = 412)	Hispanics (n = 470)
<i>Adolescent demographics</i>				
Age(older omitted)	.19***	.29***	.22***	.20***
City (Chicago omitted) ^A				
Boston ^B	1.26	.99	.83	1.41
San Antonio ^C	1.91*	1.50	1.70	2.05*
Female (males omitted)			.37***	.65
Race				
African American (omitted)				
White	.35*	.33*		
Hispanic	.49**	.81		
<i>Familial demographics</i>				
Family structure				
Stable single (omitted)				
Stable two-parent	2.55*	2.53	2.30	2.81*
Stable separated	1.50	3.18***	1.60	2.36*
Into union	1.11	3.17***	1.86	1.36
Out of union	.29	.84	.38	.86
Maternal education				
Less than HS (omitted)				
HS/GED	1.00	1.03	1.41	.81
Tech or higher	.44	.23	.33*	.84
Increased education	.89	.46	.77	.52
Welfare status				
Stable off welfare (omitted)				
Stable on welfare	1.56	1.19	1.34	1.26
Trans on welfare	2.25	2.27	3.19	2.22
Trans off welfare	1.59	1.27	.91	2.74**
Income	1.00	1.00	1.00	1.00
<i>Family processes</i>				
Family routines	.91	.94	.96	.85
Father involvement	.87	.67*	.91	.66*
Mother-child relationship	1.58	.73	1.39	.79
Parental monitoring	.37	.45	.31	.30
Father-child trust	.98	.89	.82	1.09
and communication				
Father child anger	1.01	1.10	.87	1.14
and alienation				
<i>Individual attributes</i>				
Academic achievement	.86	.82	.81	.85
Academic aspirations	1.09	1.10	1.12	1.12
Delinquency	3.15**	5.21***	2.72*	4.60***
LR chi-square	121.92***	111.36***	106.46***	113.69***
Pseudo R ²	.21	.21	.21	.22

Notes: ***p < .001; **p < .01; *p < .05.

also showed that transitioning onto welfare between waves compared to never being on welfare increased the odds of engaging in sexual activity by 2.33 times, but had no bearing on sexual debut between waves.

Taken together, the logistic results only minimally supported the hypotheses regarding the protective nature of family processes in that adolescents abstaining from sexual intercourse would have higher levels of parental monitoring, family routines, quality parent-child relationships, and father involvement. As shown in Table 2, father involvement was the only factor that decreased the odds of engaging in sexual activity. No other family processes were statistically significant.

Lastly, it was thought that academic achievement and academic aspirations would inhibit sexual activity and debut whereas delinquent involvement would expedite them. However, as seen in Table 2, significant multivariate results were only found for delinquent involvement in that adolescents who had high levels of delinquency

increased their odds of engaging in sexual activity by nearly four times and their odds of experiencing sexual debut just above two times.

Finally, Research Question 3 was aimed at assessing whether gender and race, and race*gender moderated the relationships between the family demographics, family processes, and individual attributes and sexual activity and debut. Please see Tables 3 and 4 for race and gender results for sexual activity and sexual debut respectively. Table 5 includes the results for race*gender results of sexually active adolescents. Overall, age increased the odds that sexual activity and debut occurred even when analyses were run separately by gender, race and race*gender.

When analyzed separately by gender and race, consistent support for Research Question 1 and the assumption that African Americans and boys would have the highest odds of engaging in sexual activity remained. When analyses were separated by gender, African

Table 4
Logistic regressions predicting sexual debut by gender and race.

Sexual debut	Logistic regression odds ratios			
	Boys (n = 417)	Girls (n = 480)	African Americans (n = 364)	Hispanics (n = 436)
<i>Adolescent demographics</i>				
Age(older omitted)	.18***	.37***	.26***	.20***
City (Chicago omitted) ^A				
Boston ^B	1.56	.93	.92	1.30
San Antonio ^C	2.38*	1.54	2.84**	1.88
Female (males omitted)			.45*	.63
Race				
African American (omitted)				
White	.49	.30		
Hispanic	.60	.87		
<i>Familial demographics</i>				
Family structure				
Stable single (omitted)				
Stable two-parent	1.93	2.63	2.18	3.28*
Stable separated	1.33	3.47***	1.23	2.81**
Into union	1.01	2.39	1.10	1.18
Out of union	.22	.70	.22	1.11
Maternal education				
Less than HS (omitted)				
HS/GED	1.03	1.21	1.38	.88
Tech or higher	.37	.15	.14*	.83
Increased education	.54	.16	.35	.29
HS or greater				
Welfare status				
Stable off welfare (omitted)				
Stable on welfare	1.45	1.19	1.12	1.43
Trans on welfare	2.59	1.53	4.59*	1.74
Trans off welfare	2.08	1.15	.75	3.64**
Income	1.00	1.00	1.00	1.00
<i>Family processes</i>				
Family routines	.91	.91	1.01	.78
Father involvement	.93	.72	1.04	.65*
Mother-child relationship	1.22	.76	1.00	.88
Parental monitoring	1.45	.35	.36	.60
Father-child trust	1.07	.93	.89	1.15
and communication				
Father child anger	1.16	1.10	.89	1.12
and alienation				
<i>Individual attributes</i>				
Academic achievement	.84	.82	.64*	.92
Academic aspirations	1.11	1.12	1.23	1.15
Delinquency	1.75	3.62**	.61	3.62**
LR chi-square	71.35***	65.99***	66.90***	76.91***
Pseudo R ²	.16	.16	.18	.18

Notes: ***p < .001; **p < .01; *p < .05.

Table 5
Logistic regressions predicting sexual activity by race*gender.

Sexual activity	Logistic odds ratios			
	African American boys (n = 195)	African American girls (n = 217)	Hispanic boys (n = 221)	Hispanic girls (n = 249)
<i>Adolescent demographics</i>				
Age (older omitted)	.18***	.42*	.16***	.17***
City (Chicago omitted) ^A				
Boston ^B	.54	.94	2.00	1.10
San Antonio ^C	1.37	2.11	2.77*	1.41
Female (males omitted)				
Race				
African American (omitted)				
White				
Hispanic				
<i>Familial demographics</i>				
Family structure				
Stable single (omitted)				
Stable two-parent	1.49	2.84	3.86*	2.08
Stable separated	1.55	1.58	1.46	4.74**
Into union	.73	4.29**	.98	2.34
Out of union	.08	.75	.85	.81
Maternal education				
Less than HS (omitted)				
HS/GED				
Tech or higher				
Increased education				
HS or greater	1.56	.80	.61	.88
Welfare status				
Stable off welfare (omitted)				
Stable on welfare	1.64	1.62	2.00	.98
Trans on welfare	7.03*	.71	1.76	2.84
Trans off welfare	1.12	2.82	2.67	3.38*
Income	1.00	1.00	1.00	1.00
<i>Family processes</i>				
Family routines	.75	1.15	1.00	.70
Father involvement	1.21	.80	.76	.61
Mother–child relationship	1.35	1.10	1.92	.30*
Parental monitoring	.11	3.74	.77	.11
Father–child trust and communication	.85	.76	1.15	.92
Father child anger and alienation	.80	1.10	.99	1.25
<i>Individual attributes</i>				
Academic achievement	.94	.59*	.79	1.01
Academic aspirations	1.14	1.12	1.04	1.19
Delinquency	1.40	7.18**	5.26**	6.98**
LR chi-square	56.15***	43.78**	57.97***	76.63***
Pseudo R ²	.22	.20	.22	.29

Notes: *** $p < .001$; ** $p < .01$; * $p < .05$.

Americans had higher odds of engaging in early sexual activity compared to Whites for both boys and girls. For boys only, analyses revealed that Hispanics had lower odds of experiencing sexual activity compared to African Americans. For analyses separated by race only, African American girls had lower odds of engaging in sexually active and debut than their male counterparts.

No gender differences were found for Hispanics and race was not a significant risk factor for boys or girls' early sexual debut.

When split by gender (see columns 1 and 2 of Tables 3 and 4), support for the assumption that adolescents in disrupted homes would have higher rates was supported in that girls living in stably separated homes had odds of engaging in sexual activity that were much higher compared to adolescents living in stably single-parent homes. Additionally, results revealed that living in a home where the mother formed a union between waves increased the odds of engaging in sexual activity for girls compared to girls living in a

stably single-parent home. For boys on the other hand, disputing the protective assumption of a two-parent home, results reveal that living in a stably two-parent home more than doubled the odds of being sexually active compared to living in a stably single home. Surprisingly, boys who also lived in a stably two-parent home were more likely to be sexually active than those in homes where the mother experienced a union dissolution between waves. Significant findings regarding sexual debut and family structure were also found in that girls living in stably separated homes had higher odds of experiencing sexual debut than those in stably single-parent homes. The proposition that welfare, income and maternal education would influence sexual activity and debut was not supported when analyses were split by gender only.

When analyzed separately by race (see columns 3 and 4 of Tables 3 and 4), supporting the original assumption that stably separated homes were risk factors for sexual activity, Hispanic adolescents in stably separated homes had higher odds of being sexually active or experiencing sexual debut than those in stably single-parent homes. Moreover, living in a stably two-parent home was also risk factors for sexual intercourse and debut for Hispanic adolescents. Family structure was not significantly related to sexual activity or debut among African Americans. On the other hand, maternal education was only a significant protective factor for African American adolescents in that having a mother with a technical degree or higher decreased the chances of sexual intercourse or debut compared to no high school degree or only a high school degree. Support for the assumptions surrounding welfare transitions were found for African American and Hispanic adolescents. Specifically, African American adolescents whose mothers transitioned onto welfare had higher odds of sexual debut in comparison to adolescents whose mothers were not on welfare. Furthermore, Hispanic adolescents whose families had transitioned off welfare had higher odds of early sexual activity and debut than those who remained consistently off welfare; this remained true for sexual debut among Hispanic girls as well (see Table 5).

Finally, when Research Question 2 was run separately by race*gender for those who were sexually active (shown in Table 5), only one significant protective or risk factors emerged for African American boys. Specifically, African American boys whose families transitioned off the welfare rolls in comparison to African American boys whose families were not on welfare had significantly higher odds of engaging in sexual activity. For African American girls, supporting results revealed that living in a home where the mother formed a union between waves increased the odds of sexual activity by nearly four and half times. Hispanic boys living in two-parent homes were at increased odd of sexual activity by nearly four times compared to their counterparts in stably single-parent homes. Results also reveal that living in stably separated homes increased the likelihood for Hispanic girls by more than four times. Finally, the only supportive finding regarding the assumptions about welfare was that Hispanic girls whose families transitioned off welfare were three times more likely to be sexually active than those who lived in homes of stable non-welfare users.

Regarding the assumption whether the family processes of parental monitoring, family routines, parent-child relationships, and father involvement inhibit sexual activity or debut, only limited support was found. First, only father involvement decreased the odds of engaging in sexual activity for girls and Hispanics (see Table 3). Mother–child relationship emerged as a protective factor for Hispanic girls only (see Table 5). Finally, academic achievement was found to be protective for African-Americans' sexual debut and African American girls' sexual activity (see Tables 4 and 5). Finally, delinquent involvement drastically increased the odds of not only engaging in sexual activity for girls, boys, African Americans, Hispanics, African American girls, Hispanic boys, and Hispanic girls but also increased the chances of sexual debut for girls and Hispanics.

5. Discussion

The present study contributes to the literature on early adolescent sexual intercourse and early sexual debut by simultaneously examining multiple risk and protective factors in a high-risk population of low-income, young adolescents. In the *Three-City Study*, 26% of adolescents had engaged in sexual intercourse. Specifically, 32% of boys and 17% of girls had engaged in their first sexual intercourse before age 16. Moreover, 19% of the adolescents experienced sexual debut in the 16 months between interview dates with 15% of girls and 23% of boys reporting sexual debut. Finally, it was found that maternal education and father involvement served as protective factors against early sexual intercourse whereas age, being male, African American race, two-parent family structure, stably separated family structure, living with a mother who formed a union between waves, transitioning onto welfare between waves and delinquent involvement served to increase the likelihood of early sexual activity. It was further found that maternal education served as the only protective factor against sexual debut and that age, male gender, African American race, two-parent households, separated households and delinquent involvement posed as significant risk factors for early sexual debut. These findings support the main assumption of Bronfenbrenner's bioecological theory in that adolescent behaviors, including sexual activity and debut, are influenced not only by individual attributes, but by characteristics of the adolescent's environment as well.

5.1. Rates of intercourse in the Three-City Study compared to national rates

According to the [United States Centers for Disease Control \(2002\)](#), 13% of girls and 15% of boys have had sexual intercourse before age 15. The rate of intercourse among girls in the *Three-City Study* before age 15 is 4 percentage points higher than that of the national average. However, a more noticeable difference is between the national rate of sexual intercourse for boys and the rate for boys in the present study. The percentage of boys who have had intercourse in the *Three-City Study* is more than double that of the national rate (32% and 15% respectively). This stark difference is most likely explained by the characteristics of the current sample in that adolescents in the *Three-City Study* are from low-income families in three major United States' cities: Boston, Chicago and San Antonio. Adolescents living in low-income homes are at increased risk of engaging in early sexual intercourse compared to their more affluent counterparts. Adolescents in low-income families also have a higher chance of encountering multiple risk factors simultaneously ([Small & Luster, 1994](#)) which as [Rutter \(1987\)](#) noted, created *cumulative risk*, a circumstance where in the face of numerous risk factors, an adolescent's chances of being resilient drastically decline.

The boys' rate of intercourse is also more than double that of the girls in the current study. This finding suggests that low-income boys have drastically higher chances of engaging in intercourse compared to low-income girls. This trend follows previous research that boys have younger ages at sexual debut than girls, even among low-income populations ([Alan Guttmacher Institute, 2002](#)). It suggests that more research is needed to identify the processes leading to boys' decision to engage in early sexual intercourse.

A final characteristic of the sample that helps to explain the higher rate of early intercourse, especially among boys, is the large proportion of African American (42%) and Hispanic (48%) adolescents included in the study. The [United States Centers for Disease Control \(2005\)](#) as well as other researchers ([Annie E. Casey Foundation, 2005](#); [Blum et al., 2000](#); [Santelli et al., 2004](#)), have consistently found that African American adolescents have rates of intercourse at least 15% higher than their White counterparts. In 2005, African American boys had rates of intercourse that were nearly 20% higher than their White counterparts. Although the difference between Hispanic and White adolescents' rates of sexual intercourse is not as large as that between African

Americans and Whites, in 2005 rates of intercourse among Hispanic, adolescents were 3% higher than that of the Whites ([United States Centers for Disease Control, 2005](#)). Taken together, the higher rates of intercourse among African American and Hispanic adolescents help explain the large difference between national rates and the rates found here.

The high rates of early sexual activity among this low-income sample suggest that sexual education needs to be introduced at earlier ages, especially among high-risk youth. With more than 30% of low-income boys in this study having sex before age 16 and an average age at first sexual intercourse for all adolescents reporting sexual activity of 12.8 years, interventions need to be implemented before middle school.

5.2. Family microsystem – demographic risk factors

An aim of this study was to understand the impact that the previously documented risk factors of family structure ([Moore, 2001](#); [Moore & Chase-Lansdale, 2001](#)), maternal education ([Miller et al., 2001](#)), welfare receipt ([Harris et al., 2002](#)) and income ([Miller et al., 2001](#)) had on early sexual intercourse and early sexual debut. However, the present study adds a unique aspect to the literature in that *transitions* within these family demographics were given specific attention. These transitions may result in periods of instability within the family, which can act as risk factors for negative adolescent outcomes ([Adam, 2004](#)). The result that living in a stably separated home increased the risk for early sexual intercourse and sexual debut is consistent with previous research ([Capaldi et al., 1996](#); [Miller et al., 1997](#); [Moore & Chase-Lansdale, 2001](#)). However, the finding that living in a two-parent home increases the risk for early sexual activity and debut is counterintuitive to the present literature. This finding may be explained by the types of two-parent homes assessed in the study (stepfamily versus two-parent, biological). It was not examined in the present study whether the two-parent homes were comprised of both biological parents or the biological mother and her partner (e.g., a non-biological boyfriend, cohabitant, or stepfather). Research has shown that the relationship of the parents to the child (biological versus step) has an impact on the protective nature of the two-parent family, and in some instances, living in a non-biological two-parent home was found to actually increase the risk of early sexual activity rather than decrease ([Capaldi et al., 1996](#); [Davis & Friel, 2001](#); [Moore, 2001](#)). Furthermore, due to a lack of sample size, two-parent homes included both those that were married and those that were cohabiting. However, evidence has shown that living in a cohabiting household can serve as a risk factor for early sexual debut whereas a married household poses as a protective factor ([Moore, 2001](#)). These findings suggest that future research is needed with larger samples and more detailed analyses on what types of homes adolescents are living in with distinctions made between biological and non-biological two-parent homes as well as between married and cohabiting homes.

A third finding with regard to family structure that is worth noting is that living in a home where the mother formed a union served as a risk factor for early sexual debut. Although some research has shown that *any* two-parent home can protect against early sexual intercourse, especially for minority adolescents, ([Moore, 2001](#)) other research has found that parental re-partnering during adolescence creates a time of instability and thus poses as a risk factor for early intercourse ([Capaldi et al., 1996](#); [Miller et al., 1997](#); [Wu & Thomson, 2001](#)). Indeed, the findings support this notion with those living in homes where the mother formed a union between waves having higher rates of intercourse and sexual debut than those in stably single homes.

Finally, it also seems counterintuitive that adolescents in homes where the mother experienced a union dissolution between waves were at lower risk of early intercourse and debut than those in stably

two-parent and stably separated homes. The argument for this finding may be similar to that of the two-parent finding in if the mother is separating from a non-biological father, this may eliminate the risk posed by living in a cohabiting household (Moore, 2001) or a non-biological two-parent family (Harris et al., 2002). Indeed, of the 43 adolescents whose mothers experienced a union dissolution between waves, 65% of those dissolutions occurred between the mother and a man who was not the biological father.

Ultimately, these findings suggest that stably single-parent households are not necessarily risk factors for low-income adolescents, but instead it is those families inherent with disruption, transition or instability that pose the most risk as well as those that may not be comprised of biological parents. Two-parent households have been documented mostly as protective of early sexual intercourse and debut in middle-income families, and it may be that the processes in low-income, two-parent families are different or that low-income families are less likely to involve both biological parents. Future research is needed to address the processes within various family structures in a manner that can directly compare families of different socioeconomic levels.

Family structure was not the only factor in the family microsystem found to be related to early sexual activity and debut, however. Transitioning onto welfare was found to more than double the chances of an adolescent engaging in early sexual activity. This finding is consistent with previous research that welfare receipt increases the likelihood of adolescent childbearing, which is the result of sexual activity (An, Haveman, & Wolfe, 1993; Lundberg & Plotnick, 1995). However, because constant welfare use was not related to early sexual activity, it may not be welfare use per se, but once again, like the family transition findings, the disruptions and instabilities that occur within the home when a family is forced to go on public assistance. Therefore, perhaps it is the instability that results in increased risk of early sexual activity for adolescents, not welfare.

The last factor in the family microsystem found to be related to early sexual activity is maternal education. Consistent with previous literature, findings from this study revealed that adolescents whose mothers had a technical degree or higher were half as likely to engage in sexual activity compared to those whose mothers had less than a high school degree or only a high school degree. Furthermore, adolescents had lower odds of engaging in sexual debut if their mother held a technical degree or higher or increased her formal education between waves. Cooksey et al. (1996) proposed that maternal education may delay sexual activity and debut because educated mothers are more effective in their message to their children about postponing sexual intercourse than less educated mothers. Alternatively, it may be that educated mothers are better able to provide stability in adolescents' lives being that the jobs they hold most likely pay more or the hours are more conducive to rearing children. A final postulation is that educated mothers may be more able to pay for after-school programs and activities which decrease an adolescent's opportunity to engage in sexual activity.

Ultimately, the analyses reveal that family factors are indeed related to whether an adolescent engages in sexual activity or experiences sexual debut. Taken together, the findings regarding transitions onto welfare and maternal education suggest that preventing early adolescent sexual activity and debut may involve increasing the family's social and human capital through education. Increasing maternal education has the great potential to bring better paying jobs to low-income mothers that can help the family to avoid financial strain resulting in transitions onto public assistance. These transitions no doubt cause periods of instability in the family during which adolescents are at increased risk to engage in early sexual activity. Furthermore, with results showing that two-parent families among this low-income sample increase the risk for early sexual activity, more research is needed to examine the processes occurring within low-income two-parent families.

5.3. Family microsystem – family process protective factors

The family processes of parental monitoring (Borawski et al., 2003), family routines (Loukas & Prelow, 2004), parent-child relationship (Karofsky et al., 2000), father involvement (Day, 1992) are documented protective factors against early sexual activity and debut among adolescents; however, only father involvement consistently served as a protective factor for all adolescents in the present study. As father involvement increased, the chances of being sexual active decreased. This finding is interesting in light of the previous finding that two-parent families increased the likelihood of sexual activity. A possible explanation for this is that interaction between the biological father and the child is protective whereas the presence of another male figure does just the opposite. This was supported by Day (1992) in that the presence of stepfathers increased the likelihood of early sexual experiences, especially among female adolescents. Further research is needed to assess how father involvement is related to early sexual activity in the presence of other male figures. With nearly half of all marriages ending in divorce (Sabatelli & Ripoll, 2004) keeping non-custodial parents involved is important, at least from the indications of this study. Father involvement was the only significant family process that protected against early sexual activity. Therefore, future studies should assess what processes of father involvement are protective and if having a father who is simply around is sufficient. Once the processes are identified, policies promoting father involvement are more likely to be successful.

5.4. Individual microsystem – individual protective & risk factors

Academic achievement (Coker et al., 1994; Lammers et al., 2000) and academic aspirations (Harris et al., 2002; Martin et al., 2005) have been documented as protective factors against early adolescent sexual activity. In the present study, however, in general neither was a significant protective factor for early sexual activity or debut for all adolescents. However, delinquent activity was found to be associated with early sexual activity and debut. The findings are consistent with the literature that delinquent involvement serves to exacerbate early adolescent sexual activity and debut. Adolescents engaged in delinquent acts have odds that are nearly four times higher to be sexually active and two and half times more likely to experience sexual debut. Previous work has shown that among teens, drug and alcohol use (Bachanas et al., 2002; Capaldi et al., 1996; Coker et al., 1994) as well as more serious delinquency, such as violence (Coker et al., 1994; Miller et al., 1997) or experiencing an arrest (Capaldi et al., 1996), are strong precursors to early sexual activity. In short, decreasing adolescent delinquency should be a key effort in prevention and intervention efforts that focus on decreasing the rates of sexual activity and debut, especially among early adolescents.

5.5. Race and gender differences in risk and protective factors

When assessing if gender differences occurred in the risk and protective factors for early sexual activity and early sexual debut, it was shown that the females predominately carried the main results. Girls were significantly impacted by living in a stably separated home and a home where the mother formed a union between waves. This indicates that girls may be more sensitive to separations and family transitions than boys. The girls, reducing the risk of early sexual activity by 1/3, also carried the father involvement results. Boys, however, carried the race differences in that African American boys had the highest rates of sexual activity and White boys had the lowest, with Hispanic boys falling in the middle; however, race differences disappeared when looking at sexual debut. African American girls were more likely to be sexually active by Wave 2 and experience sexual debut compared to White girls. Boys also carried the surprising finding that two-parent homes increased the likelihood of sexual activity. These findings

support the conclusion that boys and girls are affected differently by family characteristics.

Race differences also emerged in that Hispanic adolescents were affected by parental separations and living in a two-parent household where African Americans were only at increased risk of sexual activity if they lived in two-parent families. Surprisingly, the main trend that transitions onto welfare increased sexual activity flipped when looking at only Hispanics in that they were more likely to not only be sexually active but to experience sexual debut during times when the family transitioned off welfare. This finding supports the argument that it is not welfare use per se, but instead, the instability associated with times of family transitions, such as on and off public assistance, that poses as the risk factor for early sexual activity and debut. However, replication of these findings is needed due to the limited sample sizes. Maternal education was the only protective factor against sexual debut for African Americans suggesting that human and social capital are important factors for African American adolescents.

Race by gender differences were also found. First, no significant family or individual risk and protective factors were found for African American boys. However, African American girls were susceptible to early sexual activity when they lived in a family where the mother formed a union between waves. This is supported by previous research looking at other developmental outcomes in that girls are more likely to have difficulty adjusting to remarriage, and perhaps repartnerings, than boys (Needle, Su, & Doherty, 1990; Vuchinich, Hetherington, Vuchinich, & Clingempeel, 1991). Regarding differences between Hispanic boys and girls, Hispanic boys carried the unexpected finding that two-parent families increase the likelihood of sexual activity whereas for Hispanic girls living in a separated home increased the risk of early sexual activity. Hispanic girls were also at a higher risk of early sexual activity if they lived in a home where the family transitioned off welfare. Taken together with the finding that living in separated homes increases the likelihood of sexual activity, Hispanic girls seem to be extremely susceptible to household transitions and periods of instability. Finally, the mother–child relationship also emerged as a significant protective factor against early sexual activity for Hispanic girls. In a study by Day (1992), the introduction of a stepfather into the family for Hispanic girls was a risk factor for sexual debut. This suggests that the mother–daughter relationship is important for Hispanic girls and disruptions to this relationship increase the chances of negative outcomes, such as early sexual activity. This is further supported by the findings that Hispanic girls are more at risk when a separation occurs and when the family transitions off welfare being these are most likely stressful times for the mother, which may place a strain on the mother–daughter relationship.

One of the most important implications from the previous discussion about gender, race and race by gender differences in risk and protective factors is that future analyses must consider these demographic characteristics. It also suggests that blanket prevention programs are not sufficient in preventing early sexual activity. At the very least, prevention programs should be tailored to meet the different needs of boys and girls. Preventing delinquency seems crucial being it is an extremely significant risk factor for all adolescents except African American boys. This leads to the point that African American boys are at the highest risk of early sexual debut, as seen by their extremely high rates, and identifying and understanding the processes that lead to the decision to become sexually active are crucial.

5.5.1. Strengths and weaknesses

The first strength of this study is that careful attention was paid to differences in risk and protective factors based on gender, race, and race*gender because risk and protective factors for early sexual activity and debut can be confounded by adolescent race/ethnicity and gender. This attention is crucial for implementing successful

prevention and intervention programs aimed at curbing early sexual activity. Second, instability in family attributes were often neglected in previous research. Particular attention was granted to these transitions, which resulted in a deeper understanding of the family situations that serve as risk factors. Indeed, it was found that family transitions do have negative impacts on early sexual activity and that focusing on the promotion of family stability may be an important policy avenue. A further breakdown of family structure to include stepfamilies, adoptive families, step-cohabiting families, and foster families is precluded from the current study; with an increasing diversity in family structures, this further breakdown will become necessary in future research.

Third, data used in this study were from the *Three-City Study* and were initially collected in 1999 and again in 2001. This use of the panel data allowed for the observation of changes in the initiation of adolescent sexual intercourse over the course of a 16-month period which is critical to adolescent development. The data contained information on various facets of the adolescent's environment as well as individual attributes that made a bioecological approach possible allowing for the disentangling of the effects of a multitude of factors. However, age at first menarche and parent–adolescent communication about sexual intercourse and sexual education have been linked to adolescent sexual intercourse (Miller et al., 2001); yet, these constructs are not assessed in the current data set. In addition, the present study did not distinguish between heterosexual and homosexual adolescent sexual intercourse; (Savin-Williams & Diamond, 2004), it is unclear whether the risk and protective factors for early same-sex adolescent intercourse are the same as those for heterosexual intercourse.

5.6. Conclusion and policy implications

First, a consistent theme that emerged was that periods of instability in family structure and welfare use serve as risk factors for early sexual activity and debut. On the other hand, maternal education was found to inhibit sexual activity and debut. Therefore, increasing human and social capital among low-income mothers could potentially decrease the likelihood of early sexual activity and debut among early adolescents. Allotting public funding to increase maternal education may result in higher pay and more stable employment for mothers. This could reduce some of the instability caused by transitions. Second, for all adolescents, involvement in delinquent acts drastically increases the chances of early sexual intercourse and sexual debut. Decreasing drug and alcohol use as well as other forms of delinquency is a necessary part of any prevention program being this behavior inhibits adolescents' judgments and good decision-making. Finally, with gender differences apparent, more than a one-size-fits-all prevention program is needed to curb early sexual activity. Programs also need to be implemented earlier being the average age among sexually active adolescents in the present study was 12.8 years; implementing healthy decision-making programs in late elementary school may be necessary, especially among high risk populations.

Acknowledgements

We gratefully acknowledge the support of the following organizations. Government agencies: National Institute of Child Health and Human Development (RO1 HD36093 "Welfare Reform and the Well-Being of Children"), Office of the Assistant Secretary of Planning and Evaluation, Administration on Developmental Disabilities, Administration for Children and Families, Social Security Administration, and National Institute of Mental Health. Foundations: The Boston Foundation, The Annie E. Casey Foundation, The Edna McConnell Clark Foundation, The Lloyd A. Fry Foundation, The Hogg Foundation for Mental Health, The Robert Wood Johnson Foundation, The Joyce Foundation, The Henry J. Kaiser Family Foundation, The W.K. Kellogg

Foundation, The Kronkosky Charitable Foundation, The John D. and Catherine T. MacArthur Foundation, The Charles Stewart Mott Foundation, The David and Lucile Packard Foundation, Searle Fund for Policy Research, and The Woods Fund of Chicago. A special thank is extended to our research firm, Research Triangle Institute (RTI) as well as to the children and caregivers who graciously participated in the *Three-City Study* and gave us access to their lives.

References

- Adam, E. K. (2004). Beyond quality: Parental and residential stability and children's adjustment. *Current Directions in Psychological Science*, 13, 210–213.
- Alan Guttmacher Institute (2002). *Teenagers' sexual and reproductive health*. Retrieved April 9, 2005, from http://www.guttmacher.org/pubs/fb_teens.pdf
- An, C., Haveman, R., & Wolfe, B. (1993). Teen out-of-wedlock births and welfare receipt: The role of childhood events and economic circumstances. *The Review of Economics and Statistics*, 75, 195–208.
- 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.
- Bachanas, P. J., Morris, M. K., Lewis-Gess, J. K., Saret-Cuasay, E. J., Flores, A. L., Sirl, K. S., et al. (2002). Psychological adjustment, substance use, HIV knowledge, and risky sexual behavior in at-risk minority females: Developmental differences during adolescence. *Journal of Pediatric Psychology*, 27, 373–384.
- Blum, R. W., Beuhring, T., Shawe, M. L., Bearinger, L. H., Sieving, R. E., & Resnick, M. D. (2000). The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. *American Journal of Public Health*, 90, 1879–1884.
- Borawski, E. A., levers-Landis, C. E., Lovergreen, L. D., & Trapl, E. S. (2003). Parental monitoring, negotiated unsupervised time, and parental trust: The role of perceived parenting practices in adolescent health risk behaviors. *Journal of Adolescent Health*, 33, 60–70.
- Borus, M. E., Carpenter, S. W., Crowley, J. E., Daymont, T. N., et al. (1982). Pathways to the future. *A final report on the National Survey of Youth labor market experience in 1980, Volume II*. (pp.)Columbus, Ohio: Center for Human Resource Research, The Ohio State University.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Bronfenbrenner, U. (1989). Ecological systems theory. *Annals of Child Development*, 6, 187–249.
- Brooks-Gunn, J., & Paikoff, R. (1997). Sexuality and developmental transitions during adolescence. In J. Schulenberg, J. L. Maggs & K. Hurrelmann (Eds.), *Health risks and developmental transitions during adolescence* (pp. 190–219). Cambridge, United Kingdom: Cambridge University Press.
- Bumpass, L. L., & Raley, R. K. (1995). Redefining single-parent families: Cohabitation and changing family reality. *Demography*, 32, 97–109.
- 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.
- Chase-Lansdale, P., Moffitt, R. A., Lohman, B. J., Cherlin, A. J., Coley, R. L., Pittman, L. D., et al. (2003). Mothers' transitions from welfare to work and the well-being of preschoolers and adolescents. *Science*, 299, 1548–1552.
- Coker, A. L., Richter, D. L., McKeown, R. F., Garrison, C. Z., & Vincent, M. L. (1994). Correlates and consequences of early initiation of sexual intercourse. *Journal of School Health*, 64, 372–377.
- Compas, B. E. (2004). Processes of risk and resilience during adolescence: Linking contexts with individuals. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (pp. 189–231). Hoboken, NJ: John Wiley & Sons, Inc.
- Cooksey, E. C., Rindfuss, R. R., & Guilkey, D. K. (1996). The initiation of adolescent sexual and contraceptive behavior during changing times. *Journal of Health and Social Behavior*, 37, 59–74.
- 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.
- Day, R. D. (1992). The transition to first intercourse among racially and culturally diverse youth. *Journal of Marriage and the Family*, 54, 749–762.
- Duncan, G. J., & Brooks-Gunn, J. (2000). Family poverty, welfare reform, and child development. *Child Development*, 71, 188–196.
- Duncan, G. J., Yeung, W. J., Brooks-Gunn, J., & Smith, J. R. (1998). How much does childhood poverty affect the life chances of children? *American Sociological Review*, 63, 406–423.
- Friedman, R. J., & Chase-Lansdale, P. L. (2002). Chronic adversities. In M. Rutter & E. Taylor (Eds.), *Child and adolescent psychiatry* (pp. 261–276). 4th Ed. Oxford: Blackwell.
- Gold, M. (1970). *Delinquent behavior in an American city*. Belmont, CA: Brooks/Cole.
- Hamilton, S. F., & Hamilton, M. A. (2004). Contexts for mentoring: Adolescent-adult relationships in workplaces and communities. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (pp. 189–231). Hoboken, NJ: John Wiley & Sons, Inc.
- Harris, K. M., Duncan, G. J., & Boisjoly, J. (2002). Evaluating the role of "nothing to lose" attitudes on risky behavior in adolescence. *Social Forces*, 80, 1005–1039.
- Jensen, E. W., James, S. A., Boyce, W. T., & Hartnett, S. A. (1983). The family routines inventory: Development and validation. *Social Science & Medicine*, 17(4), 201–211.
- 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.
- Kirby, D. (2007). *Emerging answers 2007: Research finding on programs to reduce teen pregnancy and sexually transmitted diseases*. Washington, D.C.: The National Campaign to Prevent Teen and Unplanned Pregnancy.
- Lammers, C., Ireland, M., Resnick, M., & Blum, R. (2000). Influences on adolescents' decision to postpone onset of sexual intercourse: A survival analysis of virginity among youths aged 13 to 18 years. *Journal of Adolescent Health*, 26(1), 42–48.
- Lammers, C., Ireland, M., Resnick, M., & Blum, R. (1999). Influences on adolescents' decision to postpone onset of sexual intercourse: A survival analysis of virginity among youths aged 13 to 18 years. *Journal of Adolescent Health*, 26, 42–48.
- Loukas, A., & Prewell, H. M. (2004). Externalizing and internalizing problems in low-income Latino early adolescents: Risk, resource, and protective factors. *Journal of Early Adolescence*, 24, 250–273.
- Lundberg, S., & Plotnick, R. D. (1995). Adolescent premarital childbearing: Do economic incentives matter? *Journal of Labor Economics*, 13, 177–200.
- Martin, A., Ruchkin, V., Caminis, A., Vermeiren, R., Henrich, C. C., & Schwab-Stone, M. (2005). Early to bed: A study of adaptation among sexually active urban adolescent girls younger than age sixteen. *Journal of the American Academy of Child and Adolescent Psychiatry*, 44, 358–367.
- Miller, B. C., Benson, B., & Galbraith, K. A. (2001). Family relationships and adolescent pregnancy risk: A research synthesis. *Developmental Review*, 21, 1–38.
- Miller, K. S., Forehand, R., & Kotchick, 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.
- Miller, B. C., Norton, M. C., Curtis, T., Hill, E. J., Schvaneveldt, P., & Young, M. H. (1997). The timing of sexual intercourse among adolescents: Family, peer, and other antecedents. *Youth & Society*, 29, 1–12.
- 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, D. C.*
- Moore, M. R., & Chase-Lansdale, P. L. (2001). Sexual intercourse and pregnancy among African American girls in high-poverty neighborhoods: The role of family and perceived community environment. *Journal of Marriage and the Family*, 63, 1146–1157.
- Needle, R. H., Su, S., & Doherty, W. J. (1990). Divorce, remarriage, and adolescent substance use: A prospective longitudinal study. *Journal of Marriage and the Family*, 52, 157–169.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, 57, 316–331.
- Sabatelli, R. M., & Ripoll, K. (2004). Variations in marriage over time: An ecological/exchange perspective. In M. Coleman & L. H. Ganong (Eds.), *Handbook of contemporary families: considering the past, contemplating the future* (pp. 79–95). Thousand Oaks, CA: Sage Publications, Inc.
- Santelli, J. S., Kaiser, J., Hirsch, L., Radosh, A., Simkin, L., & Middlestadt, S. (2004). Initiation of sexual intercourse among middle school adolescents: The influence of psychosocial factors. *Journal of Adolescent Health*, 34, 200–208.
- Santelli, J. S., Lowry, R., Brener, N. D., & Robin, L. (2000). The association of sexual behaviors with socioeconomic status, family structure, and race/ethnicity among US adolescents. *American Journal of Public Health*, 90, 1582–1588.
- Savin-Williams, R. C., & Diamond, L. M. (2004). Sex. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (pp. 189–231). Hoboken, NJ: John Wiley & Sons, Inc.
- Small, S. A., & Luster, T. (1994). Adolescent sexual activity: An ecological, risk-factor approach. *Journal of Marriage and the Family*, 56, 181–192.
- Steinberg, L., Mouts, 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.
- Teachman, J. D., Tedrow, L. M., & Crowder, K. D. (2000). The changing demography of America's families. *Journal of Marriage and the Family*, 62, 1234–1246.
- Turner, C. F., Miller, H. G., & Rogers, S. M. (1997). Survey measurement of sexual behavior: Problems and progress. In J. Bancroft (Ed.), *Researching sexual behavior: Methodological issues* (pp. 37–60). Bloomington: Indiana University Press.
- United States Centers for Disease Control (2002). *Teenagers in the United States: Sexual activity, contraceptive use, and childbearing*. Retrieved July 21, 2006 from http://www.cdc.gov/nchs/data/series/sr_23/sr23_024FactSheet.pdf
- Vuchinich, S., Hetherington, E. M., Vuchinich, R., & Clingempeel, W. G. (1991). Parent-child interaction and gender differences in early adolescents' adaptations to stepfamilies. *Developmental Psychology*, 27, 618–626.
- Winston, P., Angel, R., Burton, L., Chase-Lansdale, P., Cherlin, A., Moffitt, R., et al. (1999). *Welfare, Children, and Families: A Three-City Study, Overview and Design Report* Available at <http://web.jhu.edu/threecitystudy/images/overviewanddesign.pdf>
- Wu, L. L., & Thomson, E. (2001). Race differences in family experience and early sexual initiation: Dynamic models of family structure and family change. *Journal of Marriage and the Family*, 63, 682–696.

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