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A Longitudinal Study of Sexual Risk Behavior Among the Adolescent Children of HIV-Positive and HIV-Negative Drug-abusing Fathers

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Abstract

Purpose—This is a longitudinal study of the precursors of sexual risk behavior among a cohort of adolescent children of HIV-positive and HIV-negative drug-abusing or drug-dependent fathers.

Methods—Individual structured interviews were administered to 296 drug-abusing fathers, 43% of whom were HIV-positive, and an adolescent child of each father ($\bar{X}$ age=16.3 years; SD=2.8). Adolescents were re-interviewed approximately one year later, at Time 2.

Results—Structural equation modeling showed multiple direct and indirect pathways from psychosocial factors to adolescent sexual risk behavior (sexually active, number of sexual partners, and frequency of condom use). Greater paternal drug addiction and infection with HIV/AIDS, and the youth's perception of environmental hostility (discrimination and victimization), were both related to increased adolescent maladjustment and substance use. Greater paternal drug addiction and infection with HIV/AIDS also were associated with a weaker father-child mutual attachment, which was linked with increased adolescent maladjustment and substance use. Greater perceived environmental hostility (discrimination and victimization), a weak father-child relationship, and greater adolescent maladjustment and substance use had direct pathways to adolescent sexual risk behavior.

Conclusions—Findings suggest complex interrelationships among paternal, environmental, social, personal and substance use factors as longitudinal predictors of sexual risk behavior in

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children whose fathers abuse or are dependent upon drugs. The importance of perceived environmental hostility, the father-child relationship, and adolescent maladjustment and substance use may have implications for public policy as well as prevention and treatment programs.

Keywords

Paternal HIV/AIDS; Paternal drug abuse; HIV-affected children; Father-child attachment; Adolescent sexual risk behavior; Discrimination and victimization

INTRODUCTION

Almost 12% of children in the U.S. under age 18 live with at least one parent who has a substance use disorder [1]. Individuals who abuse or are dependent upon illicit drugs, and especially those who inject illicit drugs, are at high-risk for contracting HIV/AIDS [2]. Little is known, however, about the sexual behavior of their children, who may be at risk for contracting HIV [e.g., 3] due to engagement in sexual risk behavior or the elevated rate of HIV among their social networks [4,5]. Therefore, a greater understanding of the longitudinal predictors of sexual risk behavior among the adolescent children of HIV-positive and HIV-negative drug-abusing or drug-dependent fathers is an important step towards the development of effective prevention programs.

Based on the empirical literature as well as Family Interactional Theory [6], the present study examined the interrelationship of paternal, social, environmental, personal and substance use factors, which have been linked with adolescent problem behaviors (e.g., [6–13]), and their effect on adolescent sexual risk behavior, the dependent variable.

The guiding theoretical framework for the study, Family Interactional Theory (FIT [6]), is a multi-dimensional conceptual model which seeks to explain the development of substance use and other maladaptive behaviors over time, including sexual risk behavior, by postulating the influence of factors from several domains (i.e., personal characteristics, family, peers, and more distal ecological factors), operating within a mediational framework. The pathways linking these domains are explained by three main mechanisms: social modeling, parent-child attachment, and identification with values and behaviors as a result of this attachment. For example, a parent who has introjected conventional values and does not suffer from psychopathology will model prosocial behaviors to his/her child and use appropriate child-rearing methods (e.g., a supportive parenting style). The resulting conflict-free relationship between parent and child leads to a mutual attachment and, ultimately, the child's identification with the parent and with the conventional values and behaviors modeled by the parent. Attachment to conventional aspects of the parent, in turn, is related to seeking out non-deviant peers, and to the development of conventional personal attributes in the adolescent. Residence in a close-knit, safe neighborhood, where there is low drug use, low criminal activity, and high social cohesion, supports prosocial behavior, such as less aggression and substance use, both directly as well as via the other domains of influence.

The present study focuses on the effects of paternal factors on the child, in contrast to most empirical research on parental HIV/AIDS, which has assessed mothers. Only a few studies of sexual risk behaviors in HIV-affected children have included some fathers in the analyses (e.g., [14]), and the results of these investigations suggest that children of HIV-positive parents engage in more sexual risk behaviors [3] and have had more sexual relations (when informed of parental HIV) [15]. Parental HIV/AIDS has also been linked with internalizing and externalizing symptoms and disorders in the child, including greater substance use [15,16]. In addition, research has shown that the children of drug-addicted fathers have greater emotional and behavioral problems, such as depression [13] or deviance [17].

Illicit drug addicts, including those who are HIV-positive, tend to cluster in low-income neighborhoods [18], where the prevalence of violence and illegal activities [18] put their children at risk for victimization, e.g., by assault [9]. In addition, these youth may perceive discrimination against themselves and their families due to their racial/ethnic minority status, their fathers' drug addiction, and/or paternal HIV/AIDS [19]. Both perceived discrimination and victimization have been found to predict adolescent substance use, aggression, delinquency, and depression [9,20]. We are not aware, however, of any investigations on discrimination and sexual behavior in youth, although victimization, and especially sexual victimization, has been linked with sexual risk behavior among adolescents [21].

According to FIT [6], a warm and secure father-child mutual attachment may help buffer against stressors (e.g., parental drug use) which put youth at risk for emotional and behavioral problems. Research on community samples as well as on the children of HIV-positive or drug-addicted parents has supported this paradigm [13,22]. Community studies of parenting practices and sexual risk behavior among youth have focused on parental monitoring and parent-child communication [23], which have generally shown an inverse relationship with adolescent sexual risk behavior (e.g., [11]). No investigations have specifically examined the effect of the father-child relationship on adolescent sexual risk behavior in the context of paternal drug addiction and HIV/AIDS.

Several studies have shown that adolescent emotional and behavioral problems, and especially substance use, are associated with sexual risk behaviors both concurrently and prospectively [12,24]. Brown *et al.*, [12] for instance, found that adolescents who had reported baseline depressive symptoms were approximately four times more likely to have engaged in inconsistent condom use at follow-up. Bachanas and co-authors [25] also found that alcohol and illicit drug use were linked with sexual risk behavior among low-income African American adolescent girls. Here, we highlight the precursors of adolescent emotional/behavioral problems, and examine their linkage with sexual risk behavior.

FIT posits that social, emotional, behavioral, and environmental influences may predict adolescent outcomes, such as sexual risk behavior, either directly and/or through the mediation of other factors. For example, parental drug use may directly impact the child through role modeling and may also undermine the quality of the parent-child relationship. The impaired parent-child relationship, in turn, increases the child's susceptibility to psychological and behavioral problems. Based on this theoretical orientation, and as shown in Figure 1, we hypothesize the following relationships among the Time 1 latent variables and adolescent sexual risk behavior at Time 2: 1) Greater adverse paternal attributes (drug addiction and/or HIV infection) are associated with both a weaker father-child mutual attachment, and increased adolescent maladjustment and substance use, 2) a weaker father-child attachment relationship is also associated with increased adolescent maladjustment and substance use, 3) increased adolescent maladjustment and substance use longitudinally predict more sexual risk behavior (sexual activity, more sexual partners, and less frequent condom use) at Time 2, and 4) greater perceived environmental hostility (discrimination and victimization) is linked to increased adolescent maladjustment and substance use, and to more sexual risk behavior at Time 2. (See Figure 1.)

METHODS

Participants and Procedure

The present study (N=296) has two waves of data collection of a sample of HIV-positive and HIV-negative drug-abusing or drug-dependent fathers and their adolescent children. Participant fathers were recruited through several treatment programs and community

notices in New York City, San Francisco, Hartford, Connecticut, and Tempe, Arizona. A participant father was a male volunteer who had a 12–20 year-old (biological or step-) child, and both the father and child agreed to be interviewed for the study. In addition, the father was pre-screened to ascertain that he: 1) Met DSM-III-R diagnostic criteria for drug abuse or drug dependence (other than, or in addition to, alcohol and marijuana) during the past five years, based on an adaptation of the University of Michigan Composite International Diagnostic Interview (UM-CIDI) [26]; 2) did not have severe physical health problems nor an untreated major psychiatric illness, which might compromise his ability to respond to interview questions (e.g., HIV-associated dementia or schizophrenia); 3) resided with the prospective child participant or had “face-to-face” contact with the child at least four times in the past year. If the father had more than one eligible child, the eldest was selected, whenever possible.

At Time 1 (T1), trained Masters-level psychologists or social workers administered individual structured interviews, separately and in private, to each father and adolescent pair. Adolescents were re-interviewed (by the same interviewer, whenever possible) at Time 2 (T2), approximately one year later. At T1, the majority of adolescent participants (86%) reported seeing the participant father from “about once a week” to “almost every day.”

Each interview took approximately 2 hours, and all participants were paid to compensate their time and effort. Written informed consent, including HIPAA authorization (as of April 2002), was obtained from all participants prior to the interview, in accordance with institutional and federal guidelines for the protection of human subjects. Fathers or legal guardians also provided written informed consent for the child if he/she were under 18 years at T1. (Parental consent was not required for youth 18 years or older.) Approval of the Institutional Review Boards of the New York University School of Medicine (our current affiliation) and the Mount Sinai School of Medicine (our former affiliation) was also obtained, as was a Certificate of Confidentiality from the National Institute on Drug Abuse.

The attrition rate was 41%, due to the inability to locate adolescent participants at T2 despite repeated attempts to contact them, their fathers and mothers, and the adjunct contact persons furnished at T1. A comparison of youth who completed both waves of interviews and those whom we could not locate at T2 found only one significant difference between the groups. Youth who were retained in the study reported greater identification with the father than adolescents lost to attrition ($t=2.05$; $p<0.05$).

Measures

As noted in Figure 1, we used four T1 latent variables: 1) adverse paternal attributes, 2) the father-child mutual attachment relationship, 3) the adolescent’s perception of environmental hostility, and 4) the adolescent’s maladjustment and substance use. Each T1 latent variable was a lifetime measure.

The scales comprising the latent variables, the number of items in each scale, sample items, response ranges, and the respective Cronbach’s alphas are listed in Table 1. These measures have been found to be valid and reliable in prior research, and to predict substance use and psychopathology in children and adolescents [6–8,14,20]. All scales were based on the youth’s report, as there is prior research which suggests that the child’s perception of parental characteristics is a more powerful predictor of child outcomes than the parent’s report, especially with respect to parental HIV/AIDS (e.g., [16]).

Sexual risk behavior at T2 was a latent variable based on three manifest variables, which were: a) ever had sex, b) the number of sexual partners, and c) the frequency of condom use. Sixty-one percent of the youth reported ever having had sexual relations; of these, the

median number of self-reported sex partners was 2 (the 75th quartile was 6). The self-reported frequency of condom use was: 30% used condoms always, 18% used condoms often, 6% used condoms sometimes, 5% used condoms once in a while, and 2% never used condoms. The manifest variables for the adolescent sexual risk behavior latent variable have been widely used in prior research (e.g., [24,25,27,28]). There were no significant gender differences with respect to any of the scales that comprised the dependent latent variable (sexual abstinence, the number of sexual partners, and condom use frequency). Full Information Maximum Likelihood (FIML) was applied to impute missing data (<2%) at T1. There were no missing data for the dependent variable.

Data Analysis

Latent variable structural equation models (SEM) were used to examine the empirical validity of the pathways hypothesized to link the T1 latent variables with adolescent sexual risk behavior at T2. SEM is a multivariate statistical method that evaluates both the measurement quality of a set of variables used to assess a latent construct (the measurement model) and the relationships among the latent constructs (the structural model). In order to control for the influences of paternal educational level, adolescent age, gender, high school drop-out, and residence with the biological father in the measurement and structural models, we used the partial covariance matrix as the input. That is, we analyzed the partial covariance matrix after controlling for the variables above. We then employed maximum likelihood methods to estimate the models using LISREL 8 [34]. To account for the non-normal distribution of the model variables, we used the Satorra-Bentler scaled statistic (S-B χ^2) as the test statistic for model evaluation, as recommended by Hu, Bentler, and Kano [35]. We also report three additional fit indices: the LISREL goodness of fit index (GFI), the root mean square error of approximation (RMSEA), and Bentler's comparative fit index (CFI).

RESULTS

The demographic characteristics of the sample are reported in Table 2.

All factor loadings were significant ($p < 0.05$), showing that the manifest variables were satisfactory measures of the constructs. The partial covariance matrix and the factor loadings in the measurement model are available from the authors upon request. Figure 2 presents the estimated structural model, which had the following fit indices: GFI=0.91, RMSEA=0.054, S-B χ^2 (128, N=296)=238.69, and Bentler's CFI=0.92. These results reflect an acceptable model fit.

As shown in Figure 2, greater adverse paternal attributes ($\beta=0.25$; $t=2.26$) and greater perceived environmental hostility ($\beta=0.36$; $t=2.01$) were related to increased adolescent maladjustment and substance use. A warm father-child mutual attachment relationship was inversely linked to adolescent maladjustment and substance use ($\beta=-0.17$; $t=-2.07$). There was also an inverse association between adverse paternal attributes and a warm father-child attachment relationship ($\beta=-0.20$; $t=-2.07$). Greater perceived environmental hostility ($\beta=0.21$; $t=2.62$), and greater adolescent maladjustment and substance use ($\beta=0.34$; $t=3.40$), both had a direct pathway to more adolescent sexual risk behavior at T2. In addition, there was an inverse association between the father-child mutual attachment relationship and more sexual risk behavior at T2 ($\beta=-0.20$; $t=-3.15$), which had not been hypothesized. All t -values were significant at $\alpha=0.05$, based on a two-tailed test. (See Figure 2.)

Table 3 reports the total (direct plus indirect) effects of each T1 latent variable estimated in the analysis of T2 adolescent sexual risk behavior. Each T1 latent variable had a significant

total effect on sexual risk behavior at T2, based on a two-tailed test. Of note is the large effect of perceived environmental hostility on T2 sexual risk behavior (see Table 3).

DISCUSSION

The findings of the present research provide preliminary insights into the mechanisms that operate between adverse paternal attributes (drug addiction and HIV) and sexual risk behavior in the adolescent offspring. Furthermore, the results highlight the importance of perceived environmental hostility (discrimination and victimization), as well as the adolescent's maladjustment and substance use, in the development of adolescent sexual risk behavior. Overall, our hypotheses were supported by the empirical results, with one exception: the father-child attachment relationship had a direct pathway to sexual risk behavior at T2, in addition to the hypothesized indirect pathway, which was mediated by adolescent maladjustment and substance use.

Our findings regarding adverse paternal attributes are consistent with prior research that has reported elevated rates of internalizing and externalizing problems and disorders, including greater substance use and sexual risk behavior, among the children of drug-abusing or drug-dependent and/or HIV-positive fathers (e.g., [3,7,16,17]). In accord with Family Interactional Theory [6], our results suggest that the father serves as a behavioral model of unhealthy and antisocial behaviors, such as deviance and drug use, which are imitated by his child [14]. The association of greater paternal addiction and HIV/AIDS with difficulty in the father-child relationship, as shown in our model, implies that the father's parenting practices may be adversely affected by his drug abuse and/or medical illness.

A unique feature of the present study is the examination of the effect of perceived environmental hostility on sexual risk behavior. To our knowledge, this is the first study to empirically assess the adverse effects of environmental hostility on adolescent sexual risk behavior among the children of HIV-positive and/or drug-addicted parents. The environmental hostility construct had both a direct and an indirect pathway to sexual risk behavior, and was a potent predictor in our model. The indirect effect of perceived environmental hostility on sexual risk behavior, which was mediated by maladjustment and substance use, is consistent with the literature. Prior research suggests that adolescent internalizing and externalizing problems may be reactions to the perception of a hostile and threatening environment [10]. Discrimination and victimization, for example, have been linked with increased adolescent aggression [9], and substance use may be a means of reducing the distress and emotional dysregulation induced by experiences of discrimination [36]. Additionally, higher rates of perceived discrimination and victimization may engender feelings of hopelessness, which have been found to predict maladjustment in youth, including substance use and depression [37].

The statistically-derived direct effects of perceived environmental hostility, and of the father-child attachment relationship, on adolescent sexual risk behavior may mask mediating variables that underlie these statistical associations. Thus, neighborhood characteristics or other influences may mediate the pathway from perceived environmental hostility to sexual risk behavior. For example, factors such as high unemployment and residential mobility in low-income neighborhoods have been linked with less social cohesion and weak social controls over youth (e.g., reduced neighborhood monitoring and less school attachment), which increase the likelihood of adolescent involvement in sexual risk behavior. Additionally, adolescents who live in violent neighborhoods may be more likely to affiliate with deviant peers, who model and reinforce sexual risk behavior. Nonetheless, our findings imply that developmental theory and clinical programs may benefit from examining the role

of ecological factors in adolescent sexual risk-taking, and that further research is warranted in this area.

Our results with respect to the father-child mutual attachment are consistent with FIT, as well as with studies of adolescents from both community and at-risk samples. These investigations showed that positive family relations are protective against internalizing and externalizing problems in the child, including substance use [6,8]. For example, Armistead and colleagues [22] found that the parent-child relationship mediated the link between disclosure of paternal HIV and the child's depression, externalizing problems, and school achievement. Fals-Stewart *et al.* [7] also showed that the father's parenting behavior served to mediate between his drug abuse and both externalizing and internalizing symptoms in the pre-adolescent child. Our results extend the literature by demonstrating the importance of paternal factors, including a close father-child mutual attachment, to adolescent sexual risk behavior. In addition, our findings show that adolescent internalizing and externalizing problems partially mediate between the father-child relationship and sexual risk behavior among the youth.

A direct (inverse) link, which had not been hypothesized, was found from a warm father-child mutual attachment to adolescent sexual risk behavior at T2. This pathway suggests that aspects of the father-child relationship which we assessed (e.g., time spent together) may serve as a proxy for parental monitoring and parent-child communication, both of which have been shown to be protective against adolescent sexual risk behaviors [11,23]. Taken together with other research, our results also imply that the quality of the parent-child bond is as important in protecting adolescents against sexual risk behavior as specific parenting behaviors [23]. As noted above, however, the direct pathway from the father-child attachment relationship to adolescent sexual risk behavior may be mediated by other influences which were not included in our analysis, such as the adolescent's choice of sexual partner. A close father-child bond, for instance, may establish a positive model of interpersonal relations, such that youth are more likely to choose a prosocial partner with whom they are less likely to engage in sexual risk behavior.

Our results with respect to adolescent maladjustment and substance use are consistent with previous studies, which have found that both externalizing (e.g., substance use, aggression) [24,38] and internalizing (e.g., depression) [12] problems among adolescents are highly predictive of sexual risk behavior. Youth who had been exposed to both social and environmental stressors, including lack of paternal support, were more likely to have emotional and behavioral problems, which, in turn, predicted more sexual risk behavior, approximately one year later. In addition, youth who engage in substance use may be more likely to engage in sexual risk behavior due to impaired judgment or to the disinhibitory effect of the drugs [39].

Limitations

First, we did not examine maternal, sibling or peer influences, and components of the community [e.g., 40], which may affect adolescent development and behavior. Second, childhood sexual abuse, which has been associated with sexual risk behavior in adolescence and beyond [21], was not assessed. Third, additional research is required to determine whether our findings can be generalized to other populations, such as the children of drug-addicted mothers. Fourth, we did not control for social desirability of responses, nor include other important variables, such as whether the adolescents were in a monogamous relationship where both partners had tested HIV-negative. Fifth, since the data are cross-sectional, we are limited in our ability to make inferences of a causal nature.

Nonetheless, our findings provide important information on some of the mechanisms that may be associated with sexual risk behavior over time among the adolescent children of HIV-positive and HIV-negative drug-addicted fathers, and suggest avenues for future investigations. Such research should include additional factors, and especially those which might mediate the direct effects shown in our model, such as maternal, sibling, and peer influences as well as multilevel aspects of the ecological environment. These models should also be tested at several developmental stages (e.g., early and late adolescence) in order to develop a more complete understanding of the social, environmental, emotional and behavioral precursors of sexual risk behavior, which put adolescents at risk for acquiring HIV.

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Figure 1. Hypothesized Structural Equation Model of Adverse Paternal Attributes, Perceived Environmental Hostility, the Father-Child Mutual Attachment Relationship, and Adolescent Maladjustment and Substance Use (Time 1), and Adolescent Sexual Risk Behavior at Time 2 (N=296).

Note: Ellipses represent hypothesized latent variables. Rectangles represent manifest variables.

Figure 2.

Estimated Structural Equation Model of Adverse Paternal Attributes, Perceived Environmental Hostility, the Father-Child Mutual Attachment Relationship, and Adolescent Maladjustment and Substance Use (Time 1), and Adolescent Sexual Risk Behavior at Time 2 (N=296).

GFI=0.91; RMSEA = 0.054; Satorra-Bentler χ^2 (128, N=296) = 238.69; Bentler's CFI=0.92 Paternal education, adolescent age, adolescent gender, adolescent high school drop-out, and residing with the biological father were statistically controlled.

β = standardized path coefficient; t = t-statistic.

All t-statistics were significant at $\alpha = 0.05$ (two-tailed test).

Table 1
Scales, Number of Items, Sample Item, Response Range, Score, Cronbach's Alpha

Scales†	# of Items	Sample Item	Response Range	Cronbach's alpha
Adolescent Sexual Risk Behavior (Time 2):				
Sexual abstinence	1	Have you ever had sex?	Yes (1) – No (0)	N/A
Multiple sexual partners ¹	1	About how many different persons have you had sex with?	0 - 98	
Frequency of condom use ¹ [29]	1	How often were condoms (rubbers) used when you and your partner(s) had sex?	“Used condoms always,” (1) “Used condoms often,” (2) “Used condoms sometimes,” (3) “Used condoms once in a while,” (4) “Had sex but never used condoms,” (5)	N/A
Independent Variables (Time 1)				
Adverse Paternal Attributes:				
Paternal HIV	1	Has your father ever contracted the AIDS virus?	Yes (1) – No (0)	N/A
Paternal Drug Addiction	1	Has your father ever been addicted to drugs?	Yes (1) – No (0)	N/A
Paternal Needle-sharing [29]	1	Has your father ever shared needles?	Yes (1) – No (0)	N/A
Perceived Environmental Hostility:				
Perceived Discrimination	6	How often have you personally experienced discrimination by police or security guards?	“Never” (1) - “Often” (3)	.81
Victimization [30]	5	How often have you experienced someone hitting you with a weapon or shooting you?	“Never” (1) - “5 or more times” (5)	.75
Father-Child Mutual Attachment Relationship:				
Paternal Affection [31]	4	He frequently shows his love for you.	“Not at all like your father” (1) - “Very much like your father” (4)	.83
Paternal Child-Centeredness [31]	5	He likes to talk to you and be with you much of the time.	“Not at all like your father” (1) - “Very much like your father” (4)	.89
Time Spent with Father [6]	3	About how much time do you spend doing things with your father, like going to the movies or sports activities?	“When special occasions occur” (1) - “Every day” (5)	.76
Identification with Father [6]	10	How much do you admire your father in his role as a parent?	“Not at all” (1) - “In every way” (5)	.91
Father-Child Conflict [31]	4	You often break his rules.	“Not at all like you” (1) - “Very much like you” (4)	.79
Adolescent Maladjustment and Substance Use:				
Aggression [32]	5	How often have you hurt someone badly enough to need bandages or a doctor?	“Never” (1) - “5 or more times” (5)	.76
Depression [33]	5	How much have you been bothered by feeling hopeless about the future?	“Not at all” (1) - “Extremely” (5)	.75

Scales†	# of Items	Sample Item	Response Range	Cronbach's alpha
Tobacco Use	1	On average, how many cigarettes have you ever smoked?	"None" (1) - "About 1½ packs a day or more" (6)	N/A
Alcohol Use (beer, wine, or "hard liquor")	2	How often have you drunk beer or wine?	"Never" (1) - "Three or more drinks every day" (5)	N/A
Illicit Drug Use (e.g., hashish, marijuana, amphetamines, barbiturates, cocaine, heroin, LSD, quaaludes, tranquilizers)	2	How often have you ever used marijuana or hashish?	"Not at all" (1) - "Every day" (6)	N/A

†Youth who "never had sex" were assigned a score of 0.

Notes - All scales based on adolescent's report. Scales not followed by a superscript number are original. Cronbach's alphas are not defined for scales based on one item.

Table 2**Demographic Characteristics of the Sample (N=296)**

Fathers (Time 1):	
$\bar{X}$ age:	42.1 years (SD=6.5)
Lifetime Drug Use:	
Injection drug use (versus other route of administration)	76%
HIV Status:	
HIV-positive	43%
HIV-negative	55%
Unknown	2%
Median Educational Level:	High School Completion or GED (Equivalency)
Employed Full-time:	24%
Employed Part-time:	13%
Unemployed:	63%
Median Household Income Range:	\$10,000 – \$15,000 per annum
Adolescents (Time 2):	
Male:	52%
$\bar{X}$ age:	17.2 years (SD=2.7)
Female:	48%
$\bar{X}$ age:	17.0 years (SD=2.7)
High School drop-out	18%
Ethnicity:	
African American:	46%
Hispanic	44%
Non-Hispanic Caucasian	8%
Other:	2%
Resides with Biological Father (Youth report):	33%
HIV Status Among Tested Youth (53%):	
HIV-positive	1%
HIV-negative	97%
Results unknown	2%
Contracted a sexually transmitted infection?	
Yes	8%
Thinks “you could contract HIV/AIDS from having intercourse without using a condom.”	
Yes	93%
No	3%
Unsure	4%

Table 3

Total Effects of Adverse Paternal Attributes, Perceived Environmental Hostility, the Father-Child Mutual Attachment Relationship, and Adolescent Maladjustment and Substance Use (Time 1) on Adolescent Sexual Risk Behavior at Time 2.

Latent Variable	Total Effect
Adverse paternal attributes	$\beta=0.13$ ($t=2.42$) *
Father-child mutual attachment relationship	$\beta=-0.26$ ($t=-3.72$) **
Perceived Environmental Hostility	$\beta=0.33$ ($t=3.41$) **
Adolescent maladjustment and substance use	$\beta=0.34$ ($t=3.40$) **

*
p<0.05;

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p<0.001 (two-tailed test).