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Does substance use moderate the effects of parents and peers on risky sexual behaviour?

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Abstract

We investigated the moderating effects of drug/alcohol use in the past 3 months on the relationships of peer influence, parental permissiveness, and teen disposition (i.e., achievement motivation, attitude toward school, and value placed on health) with adolescent risky sexual behaviour. Participants were 207 adolescents receiving psychiatric care. Substance use did not moderate the relationship between adolescent disposition and risky sex. By contrast, peer influence and parental permissiveness were linked to risky sex but only for teens who reported using drugs/alcohol. Controlling for other predictors in the model, negative peer influence explained 21% and parental permissiveness explained 13% of the variance in risky sex among substance users, but less than half of 1% of the variance among non-substance users. The disinhibiting effects of substance use on decision-making and the need for effective parental monitoring to reduce opportunities for risk behaviour are discussed.

Introduction

The incidence of AIDS has declined over the past decade in the US (CDC, 2003), but HIV infections continue to rise among young people. Adolescents comprise 25% of all new cases (CDC, 2004a) and most are acquired through risky sex–unprotected sex, sex with multiple partners, frequent sexual activity. The rate of sexual intercourse among teens is high; 61.6% have had intercourse by 12th grade, yet only 63% report condom use at last sex (CDC, 2004b). Substance use confers risk for HIV through its relationship with sexual risk taking; it interferes with cognitive processes important for HIV-prevention and reduces the likelihood of accurate condom use (Dermen et al., 1998). Teens report high rates of lifetime alcohol (83%) and marijuana (49%) use by 12th grade, and 25% of sexually active youths report alcohol or drug use before last sex (CDC, 2004b). Curbing the epidemic will require significant resources for adolescent sexual risk reduction and substance use prevention.

Important linkages exist among sexual risk taking, substance use, and mental health (Donenberg & Pao, 2005). Compared to their school-aged peers, teens in mental health care report more sexual activity, multiple partners, increased substance use, and decreased condom use (Brown et al., 1997; Smith, 2001). Youths' reports of having sex while using drugs and alcohol are correlated with the number of sexual partners (Donenberg et al., 2002), and drug and alcohol use in the past 3 months is related to risky sexual behaviour and negative peer influence (Donenberg et al., 2001). Despite these associations, research on specific risk and protective mechanisms for teens with mental health and substance use problems has been limited. Additional inquiry regarding the role of substance use in adolescent sexual risk taking

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will yield a more complete understanding of the mechanisms that place troubled teens at risk for HIV infection.

Few theories of HIV risk and prevention address broader contextual issues, despite evidence that parents (Donenberg et al., 2002), peers (Donenberg et al., 2001), and dispositional factors (Jessor, 1991) influence teenagers' risk behaviour. Bronfenbrenner (1986) highlights the impact of multiple interacting systems (e.g., individual, family, community) on behaviour, but he does not consider the role of mental health. Donenberg and Pao (2005) describe a social-personal framework to understand HIV-risk behaviour among teens in psychiatric care drawing on ecological, health behaviour (Fisher & Fisher, 1992), and developmental psychopathology theories (Cicchetti, 1999). This framework emphasizes the interacting influences of family context, mental health, substance use, peer and partner relationships, and personal attributes as predictors of unsafe sex among troubled youths.

We examined the effects of parents, peers, and personal attributes on teens' sexual risk taking and the role of substance use in these associations. Increased parental monitoring and supervision are related to decreased sexual experience and sexual activity among teens (Kotchick et al., 2001), and greater parental permissiveness is implicated in more frequent sexual activity and higher rates of risky sex (Davis & Friel, 2001; Werner & Silbereisen, 2003). Less is known about how adolescent drug/alcohol use influences these relationships. Sexual activity and substance use attitudes often reflect perceptions of peer norms and peer influence (Rodgers & Rowe, 1993). Teens who believe their friends use condoms are more likely to report consistent condom use (Crosby et al., 2003), and youths who report substance use have friends who use substances. Because troubled teens tend to associate with risky peers (Smith, 2001), their social context may make them particularly vulnerable to negative peer influence. Indeed, negative peer influence is associated with risky sex and substance use and mediates the links between psychopathology and risk behaviour (Donenberg et al., 2001). The influence of substance use on the relation between sexual risk taking and peer influence has not been determined. Finally, dispositional characteristics are related to adolescents' sexual decision-making and risk behaviour, including attitudes toward health, academic achievement, and school (Jessor, 1991; Kirby, 2002; Rosengard et al., 2004). Less is known about their impact on troubled teens or whether substance use influences these relations.

We expected elevated rates of sexual risk to be related to substance use, parental permissiveness, negative peer influence, and non-adaptive attitudes (i.e., low achievement motivation, negative attitude toward school, and low value on health). We predicted that parental permissiveness, negative peer influence, and non-adaptive disposition would be more strongly associated with risky sex among adolescent substance users than non-substance users.

Methods

Overview of procedures

These data are part of a larger longitudinal study of HIV-risk among youths seeking outpatient psychiatric services. Adolescents and caregivers were recruited from three clinics in Chicago. Fifty-six percent of the families contacted agreed to participate (n = 247/439). Consenters and refusers did not differ significantly by child gender (p = 0.908) or child age (p = 0.356). Parents and youths completed separate interviews. They were compensated for their participation, and received informational pamphlets about AIDS transmission and prevention. We examined adolescents' perceived parental permissiveness, negative peer influence, and dispositional characteristics in relation to teens' sexual risk-taking and substance use.

Participants

Participants were 207 adolescents (47.3% female) for whom complete data were available. Teens were 12–20 years (M = 15.12; SD = 1.82), ethnically diverse (44% African-American, 35% Caucasian, 12% Latino, 6% biracial, 3% other), and 46% reported low to middle incomes. Of the youths (82%) who completed at least one section of the Computerized Diagnostic Interview Schedule for Children (CDISC; Shaffer et al., 1991), 20, 20, 11, and 37% qualified for a mood, anxiety, conduct, and any psychiatric disorder, respectively. According to parents (80%) who completed at least one section of the CDISC, 23, 24, 41, and 63% of the teens qualified for a mood, anxiety, disruptive behaviour, and any psychiatric disorder, respectively.

Consistent with earlier findings (Donenberg et al., 2001), this sample engaged in high rates of risky behaviour. Forty-two percent reported having had vaginal, anal, and/or oral sex in their lifetime. Among sexually active adolescents ($n = 86$), 42% reported sex with a high-risk partner, 47% reported sex while using drugs/alcohol, and 67% reported vaginal, anal and/or oral sex without a condom. Thirty-nine percent of the teens reported using substances in the past 3 months, primarily alcohol (30%, $n = 62$), marijuana (25%, $n = 51$), or both 18% ($n = 37$).

Measures

Family demographics—Parents reported on adolescent's age, gender, and ethnicity, and the family's income.

Parental permissiveness—The Parenting Style Questionnaire (OSLC, 1990) measures youths' perceptions of parental permissiveness. Its reliability and validity are well established, and the instrument has been used extensively with pre-teens, teens, and youths in psychiatric care (Donenberg et al., 2002). Higher scores reflect more permissiveness. The scale's internal consistency was acceptable (Cronbach's $\alpha = 0.73$).

Negative peer influence—Negative peer influence was assessed using six items measuring peer support and approval of high-risk behaviour. Items were drawn from a well-validated measure of adolescent health behaviour (Costa et al., 1996). Higher scores indicate greater peer approval of substance use and sexual intercourse. The scale's internal consistency was strong (Cronbach's $\alpha = 0.90$).

Adolescent disposition—We created a composite measure of adolescent disposition using youths' reports from a well-validated measure of adolescent health behaviour (Costa et al., 1996). Items were combined from the following scales. (a) *Achievement motivation*–four items reflecting the importance of doing well in school and being considered bright by teachers. Higher scores indicate greater importance. (b) *Attitude toward school*–five items measuring the importance of school and education as key to success in life. Higher scores reflect greater disagreement. Items were reversed scored for the analyses. (c) *Value placed on health*–seven items measuring the importance of feeling healthy, avoiding illness and getting better when sick. Higher scores indicate greater importance. The three indices were standardized and averaged to create a single composite measure of positive adolescent disposition. The combined scale had adequate internal consistency (Cronbach's $\alpha = 0.70$).

Risky sexual behaviour and drug use—The AIDS Risk Behaviour Assessment (ARBA; Donenberg et al., 2001) is a self-administered adolescent interview assessing sexual behaviour, drug/alcohol use, and needle use. Youths self-administered the ARBA using a voice directed computer ($n = 108$) or a portable cassette tape player and recorded their responses on a questionnaire ($n = 99$). Both procedures elicited relevant information. Consistent with previous research (Donenberg et al., 2001, 2002), we created a composite risky sex score comprised of three indices: (a) number of partners in the past 3 months; (b) having vaginal, anal, or oral sex

with a high-risk partner (1 = yes; 0 = no); and (c) having vaginal, anal, or oral sex without a condom, (1 = yes; 0 = no). We standardized each measure and combined them to create a continuous global index of risky sex. This approach avoids dichotomous outcomes and provides a more reliable assessment. The standardized risky sex composite revealed acceptable reliability (Cronbach's $\alpha = 0.72$). Substance use was determined based on whether or not adolescents reported using drugs/alcohol during the past 3 months (1 = yes; 0 = no).

Results

Overview of data analyses

We evaluated statistical significance using two-tailed tests at the 0.05 probability level, and we gauged the magnitude of relationships using Cohen's (1988) *d*. We conducted multiple regression analyses to examine the main effects of parent, peer, and dispositional factors on teens' risky sex controlling for age and gender. To capture the moderating effects of substance use, we centered the main effects and then multiplied them to form cross-product terms for the interactions of permissiveness × substance use, peer influence × substance use, and disposition × substance use. We simultaneously entered the interaction terms and centered main effects as predictors of risky sex in a multiple regression model, determining the unique effect of each predictor (β) (Cohen & Cohen, 1983).

Main effects

Table I presents the means, standard deviations, and intercorrelations of the study variables for the total sample. Males reported more parental permissiveness than females, $t(205) = 2.85$, $p < 0.005$, $d = 0.40$, but there were no significant gender differences in negative peer influence, $t(205) = 1.42$, $p > 0.15$, $d = 0.20$, or disposition, $t(205) = 1.02$, $p > 0.30$, $d = 0.14$. The relationship between gender and substance use was non-significant, $\chi^2(1, n = 207) = 2.60$, $p > 0.10$, $d = 0.22$. Females were significantly older than males, $t(205) = 2.58$, $p < 0.02$, $d = 0.36$, and older teens reported more negative peer influence ($r = 0.66$, $p < 0.0001$, $d = 1.75$), parental permissiveness ($r = 0.19$, $p < 0.005$, $d = 0.39$), and risky sexual behaviour ($r = 0.43$, $p < 0.0001$, $d = 0.92$). Disposition was not associated with age ($r = -0.01$, $p > 0.96$, $d = 0.02$). Substance users were older than non-substance users, $t(205) = 7.77$, $p < 0.0001$, $d = 1.10$.

Together the predictors explained 44% of the variance in risky sex, $F(9,197) = 17.27$, $p < 0.0001$, $d = 1.77$. Partially confirming hypotheses, negative peer influence, $\beta = 0.36$, $p < 0.0001$, $d = 0.42$, and parental permissiveness, $\beta = 0.13$, $p < 0.026$, $d = 0.26$, each had a positive relationship with risky sex, but disposition did not, $\beta = 0.02$, $p > 0.76$, $d = 0.03$. Two of the hypothesized interactions–peer influence × substance use, $\beta = 0.18$, $p < 0.003$, $d = 0.29$, and parental permissiveness × substance use, $\beta = 0.17$, $p < 0.003$, $d = 0.29$–were statistically significant, but disposition × substance use was not, $\beta = -0.03$, $p > 0.59$, $d = 0.05$ (see Table II).

Probing significant interactions

We conducted multiple regression analyses separately for substance users ($n = 81$) and non-substance users ($n = 126$), simultaneously entering parental permissiveness, negative peer influence, disposition, age, and gender as predictors and risky sex as the outcome. We plotted the interactions by computing simple slopes for the main effects of peer influence and parental permissiveness conditional on substance use or no substance use, and then substituting scores one standard deviation above and below the mean (cf. Aiken & West, 1991; Holmbeck, 2002). Negative peer influence, $\beta = 0.47$, $p < 0.0001$, $d = 0.43$, and parental permissiveness, $\beta = 0.33$, $p < 0.001$, $d = 0.33$, were significantly related to risky sex among adolescent substance users but not among non-substance users (negative peer influence, $\beta = 0.08$, $p > 0.44$, $d = 0.07$, and parental permissiveness, $\beta = -0.05$, $p > 0.61$, $d = 0.05$). Among substance users, more

negative peer influence and greater parental permissiveness were associated with more risky sex (see Figures 1 and 2). Controlling for the other predictors in the model, negative peer influence explained 21%, and parental permissiveness explained 13%, of the variance in risky sex among substance users but less than half of 1% among non-substance users.

Discussion

We examined the effects of substance use on the relation between risky sex and peer, parent, and dispositional characteristics among teens in psychiatric care. As expected, negative peer influence and parental permissiveness were related to greater risky sex, but mainly among adolescents who reported substance use in the past 3 months. Substance use may operate as a risk factor for HIV by potentiating the influence of negative peer influence and permissive parenting on adolescent risky sex. Contrary to research on school-based populations, adolescent attitudes toward health, achievement, and school were not related to any of the outcome variables. These data suggest that negative peer influence and parental permissiveness may be more important influences on sexual risk than adolescent disposition, particularly for teens who endorse recent substance use.

Findings are consistent with prior research linking higher rates of risky sex with substance use, parental permissiveness, and negative peer influence (Donenberg et al., 2001, 2002). This study extends the literature to low-income minority teens receiving mental health care. Parental permissiveness and having friends who support risk behaviour enhance opportunities for substance use and sexual risk. For troubled teens, this ‘risk’ context combined with the tendency toward poor interpersonal skills, cognitive deficits, and impaired emotion regulation pose significant obstacles to HIV prevention. Many of these youths are not equipped to make safe decisions, and without adequate parental monitoring and positive peer influences, they may be especially vulnerable to risk behaviour. Enacting safe behaviour requires rational decision-making and adequate communication skills in the context of strong emotions, yet substance use impairs judgment, increases disinhibition, and diminishes the capacity for affect regulation (Shedler & Block, 1990). Thus, practicing prevention (e.g., negotiating condom use, refusing sex) becomes even more difficult when intoxicated.

Substance use in the past 3 months significantly influenced the well-established relationships between parental permissiveness and risky sex and negative peer influence and risky sex. This study sheds new light on how substance use affects risk behaviour in the context of peers and parents for low income urban teens in psychiatric care. Parental involvement and low-risk contexts are perhaps especially important for troubled youths to avoid health-compromising situations. Effective parental monitoring and positive peer influences (Donenberg et al., 2003) can play critical roles in reducing exposure to risky situations that require skills yet to develop in troubled teens. Findings from this study underscore the importance of substance use above and beyond the impact of peers and parents in HIV/AIDS risk, highlighting the importance of substance use as an additional target of HIV prevention programs for this population.

Contrary to expectations, teens’ value on health, academic motivation, and achievement were not associated with any study variables. Previous research has linked sexual risk and these characteristics among school-based youths, but there is evidence that disposition is less important than social contexts (Bradley & Wildman, 2002). It is possible that the characteristics examined in this study exert little influence on sexual risk among troubled youths, because other obstacles have a greater impact on their behaviour, like mental health problems (Donenberg et al., 2001). Our findings suggest that social factors may be more important for understanding risk among teens in psychiatric care than disposition.

Study limitations suggest cautious interpretation of the findings. The data are self-reported and cross-sectional and therefore cannot indicate causality. Self-reported risky sex and substance use suffer from social desirability, yet evidence supports the veracity of self-reports (Harrison, 1995), especially when data are collected using audio-assisted technology as in this study. Findings do not generalize beyond teens in outpatient psychiatric care. We used a composite measure of sexual risk and a dichotomous indicator of substance use, resulting in a limited assessment of risk behaviour. However, a composite score is more reliable than a single indicator and allows greater statistical power. Both measures offer important information about the role of substance use within a social context of risk.

Findings highlight important targets for HIV prevention. Mental health practitioners have unique access to troubled teens and their families and can influence risk reduction efforts through education about exposure risks, teaching parents effective monitoring skills, and providing substance use treatment. By broadening the scope of mental health services to incorporate successful strategies for HIV prevention (e.g., Jemmott et al., 1998), clinicians can address adolescent sexual health and risk behaviour thereby changing the course of the epidemic.

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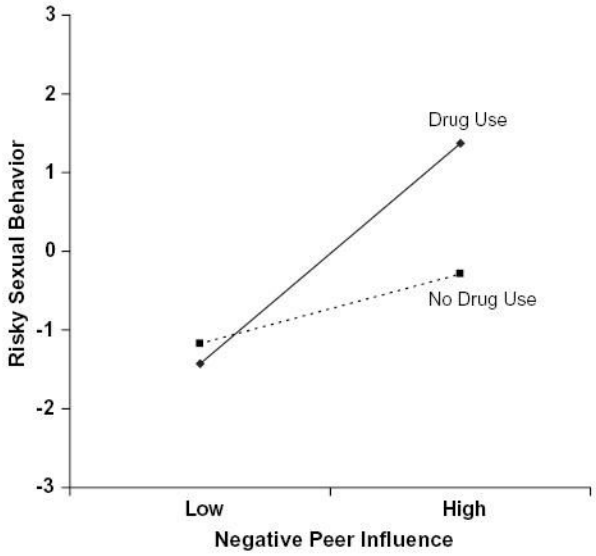

Figure 1.

Adolescent risky sexual behaviour as a function of negative peer influence, plotted separately for participants who reported using substances during the past 3 months (n = 81) and participants who reported not using substances during the past 3 months (n = 126). Scores one standard deviation above (high peer influence) and one standard deviation below (low peer influence) the mean on negative peer influence have been used to plot the interaction (cf. Cohen & Cohen, 1983; Aiken & West, 1991; Holmbeck, 2002). For adolescents who reported using substances during the past 3 months, the slope of the regression line is significantly different from zero; whereas for adolescents who reported no substance use during the past 3 months, the slope of the regression line is not significantly different from zero.

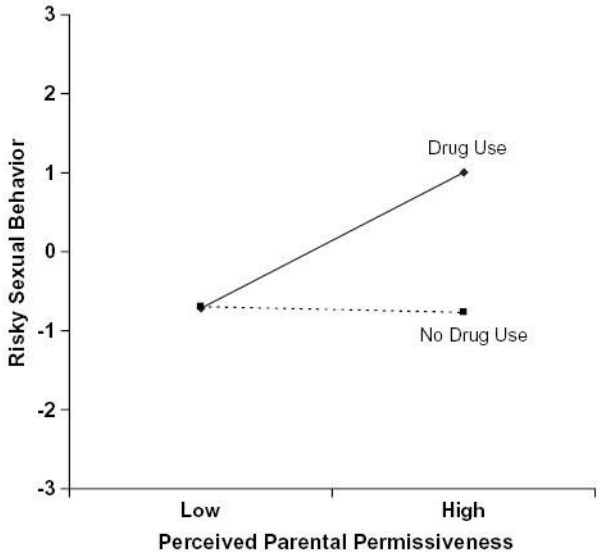

Figure 2.

Adolescent risky sexual behaviour as a function of perceived parental permissiveness, plotted separately for participants who reported using substances during the past 3 months (n = 81) and participants who reported not using substances during the past 3 months (n = 126). Scores one standard deviation above (high permissiveness) and one standard deviation below (low permissiveness) the mean on parental permissiveness have been used to plot the interaction (cf. Cohen & Cohen, 1983; Aiken & West, 1991; Holmbeck, 2002). For adolescents who reported using substances during the past 3 months, the slope of the regression line is significantly different from zero; whereas for adolescents who report no substance use during the past 3 months, the slope of the regression line is not significantly different from zero.

Table I

Means, standard deviations, and intercorrelations of study variables for the total sample.

	1	2	3	4	5	6	7	8	9	10
1. Age	–									
2. Gender	−0.18	–								
3. Negative peer influence	0.66	−0.10	–							
4. Parental permissiveness	0.19	0.20	0.19	–						
5. Dispositional scale	− 0.01	−0.07	−0.05	−0.14	–					
6. Substance use	0.48	− 0.11	0.64	0.13	−0.09	–				
7. Peer influence × substance use	− 0.01	− 0.01	0.08	− 0.05	− 0.11	0.36	–			
8. Permissiveness × substance use	0.01	− 0.16	− 0.04	− 0.03	0.10	0.06	0.11	–		
9. Disposition × substance use	0.01	0.11	− 0.09	0.10	0.02	− 0.05	− 0.04	− 0.08	–	
10. Risky sexual behaviour	0.43	− 0.13	0.56	0.20	− 0.03	0.54	0.28	0.19	− 0.08	–
Mean	15.1	1.5	12.6	10.0	0.0	0.4	1.4	0.2	0.0	0.0
Standard deviation	1.8	0.5	4.5	3.7	1.5	0.5	1.7	1.8	0.8	2.4

Note: $N = 207$. Gender was scored 1 = female (47%, $n = 98$), 2 = male (53%, $n = 109$). Substance use during the past 3 months was scored 0 = not used substances (61%, $n = 126$), 1 = used substances (39%, $n = 81$). $|r| \geq 0.14$ is statistically significant at $p < 0.05$, two-tailed.

Table II

Results of multiple regression analysis predicting risky sexual behaviour (N = 207).

Predictors	β	$p <$	Partial r^2
Negative peer influence	0.36	0.0001	0.09
Parental permissiveness	0.13	0.03	0.02
Dispositional scale	0.02	0.77	<0.01
Substance use	0.17	0.03	0.02
Age	0.08	0.31	<0.01
Gender	−0.05	0.37	<0.01
Peer influence × substance use	0.18	0.003	0.04
Permissiveness × substance use	0.17	0.003	0.05
Disposition × substance use	−0.03	0.60	<0.01
R^2 = 0.44			

Note: Gender was coded as 1 = female and 2 = male. Partial r^2 represents the proportion of variance in risky sexual behaviour that each predictor explains when controlling for the other predictors in the model. R^2 represents the proportion of variance in risky sexual behaviour explained by the entire set of predictors. For the overall regression equation, $F(9,197) = 17.27$, $p < 0.0001$, $d = 1.77$.