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Negative Affect and HIV Risk in Alcohol and Other Drug (AOD) Abusing Adolescent Offenders

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Abstract

Various depressive symptoms have been linked to elevated levels of HIV risk across diverse adult populations in multiple studies. However, this link has been examined in a much more limited manner among adolescents, despite an exceedingly heightened risk of both HIV and negative affect in this age group. To address the current lack of clinically pertinent knowledge in this area, we analyzed baseline data from 256 male and 107 female inner city, culturally diverse adolescent offenders. Relatively “high” and “low” negative affect subgroups were formed by conducting a median split on scores from the well-validated depressive affect scale of the Millon Adolescent Clinical Inventory (MACI). Compared to the low negative affect subgroup, the high negative affect participants reported significantly more sexual partners, unprotected sex, and increased susceptibility to HIV, as well as more marijuana, cocaine, and alcohol use (all p 's < .05). Although demonstrating better condom skills, negative affect participants reported less favorable attitudes towards using condoms, less knowledge about HIV transmission, and lower sexual self-efficacy than non-depressive participants. Symptoms of negative affect are therefore of particular concern for adolescents, who are at risk not only for generally acknowledged difficulties such as suicide, but also for multiple HIV risk factors. The theoretical and applied implications of these findings will be discussed.

Keywords

HIV; affect; substance abuse; adolescent; personality; Millon

The incidence of HIV for adults in the United States has consistently declined over the last several years. However, this has not been the case among youth. The number of adolescents with HIV has increased dramatically, and AIDS is now one of the leading causes of death among persons between 15 and 24 years of age (Centers for Disease Control and Prevention, 2000). In fact, in 2000, the Centers for Disease Control and Prevention (CDC) estimated that at least half of all new HIV infections in the United States were among people under age 25, the majority of whom contracted the virus through sexual contact. Adolescents are a high risk HIV group for multiple reasons. From a developmental perspective, adolescents often see themselves as invincible and tend to underestimate the risk of acquiring HIV (Trad, 1994;

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Walter, Vaughan, & Cohall, 1991). They also frequently experiment with drugs during this time, which may impair their cognition, increasing the chance that they will engage in risky sexual behaviors (Rotheram-Borus et al., 2000). Furthermore, adolescence is a time of high sexual activities and often unprotected sex (Lawrence, 1993).

Research on depression and negative affect suggests a possible association with HIV risk. Several features associated with depression, such as dysphoric mood, negativistic thinking, decreased self-efficacy, negative self-perception, and low assertiveness have been linked to increased levels of risky sexual behaviors and thus at increased risk for contracting HIV (Gold & Skinner, 1992; Morris & Reilly, 1987). The higher prevalence of substance abuse among depressed persons further increases their risk of becoming infected with HIV due to the decreased cognitive impairment and increased risk behavior (e.g., needle sharing, sex trade) associated with substance use (Joe, Knezek, Watson, & Simpson, 1991; Malow et al., 1992; Marks et al., 1998; Waddell, 1992). It has also been suggested that the association with risk behavior may lie in the altered self-regulatory processes of those with negative affect states (Crepaz & Marks, 2001; Gold & Skinner, 1992; Morris & Reilly, 1987). Specifically, pleasurable acts such as unprotected sex may take precedence over safety and protection when one is seeking to remedy negative affect. Thus, similar to alcohol and other drug (AOD) use, risky sex may be conceptualized as self-medicating, especially for individuals with depressive or negative affect. Higher levels of depressive and negative affect have also been linked to lower levels of health-promoting behaviors including unsafe sex (Chesney, Folkman, & Chambers, 1996).

Interestingly, in their meta-analytic review of the literature, Crepaz and Marks (2001) found that, among 34 empirical studies, higher levels of negative affect were *not* associated with risky sex, contradicting the assumptions of the theoretical literature and interpretations of the current empirical literature. However, as noted by Kalichman and Weinhardt (2001), there are several possible explanations for this finding, including methodological difficulties of the studies assessed. For example, *current* affective states measured by global measures, may not reflect the negative affect present at the time the individual engaged in risk behavior, thus the link between negative affect state and subsequent risk behavior would not be accurately captured. Additionally, only one of the included studies reported a primarily adolescent sample.

A subgroup of adolescents at particularly high risk for both HIV and negative affect are adolescent offenders, who frequently engage in more HIV risk behavior which often commence at younger ages than peers (Gillmore, Morrison, Lowery, & Baker, 1994; Malow et al., 1997; Robertson & Levin, 1999). Several investigators have reported high rates of depression, among other psychiatric disorders, in the adolescent offending population (Crowley et al., 1998; Duclos et al., 1998; Weist, Paskewitz, Jackson, & Jones, 1998). For example, self-reports of delinquent behavior were associated with those of depression, anxiety, life stress, lower self-concept, and less cohesive families among youths (Weist, Paskewitz, Jackson, & Jones, 1998). Among adolescent offenders, Canterbury et al. (1995) reported extreme HIV risk has been associated with such factors as:

1. early age at first intercourse;
2. less frequent use of condoms during sex;
3. less HIV-related knowledge;
4. lower perceived susceptibility to HIV infection;
5. less self-efficacy to engage in preventive behavior;
6. higher levels of psychopathology;
7. more permissive attitudes toward sex; and

8. different patterns of HIV risk factors including prostitution for money, drugs, food and shelter (Canterbury et al., 1995).

Similarly, DiClemente (1991) found that incarcerated adolescents initiate sexual activities at an earlier age, report more sexual partners, are more likely to be sexually active, and do not practice safe sex consistently compared to their non-incarcerated counterparts.

Despite these findings, together with the documentation of high prevalence of depressive symptoms among AOD abusing adolescents (Bukstein, Glancy, & Kaminer, 1992), very few studies has been conducted to assess the association between negative affect and HIV among adolescents, particularly those involved with the criminal justice system. In one such study, Alegria et al. (1993) assessed depressive symptoms, sexual practices, drug use, and risk reducing behavior among 75 adult and 74 adolescent street sex workers in Puerto Rico. The researchers found that 75% of adults and 68% of adolescents fell into the high depressive category, which was associated with use of injected drugs and unprotected intercourse.

To address the current lack of clinically pertinent knowledge in this area, we analyzed baseline data from 256 male and 107 female, inner city, culturally diverse adolescent offenders. In the few studies that do exist on this topic, negative affect has been primarily assessed using depression scales such as the Center of Epidemiology Studies-Depressive Scale (CES-D), the Symptom Checklist-90 (SCL-90), and the Beck Depression Inventory (BDI; Beck et al., 1961; Crepaz & Marks, 2001). Although these scales are well-established, they do not accurately reflect the broad range of negative affect that extend beyond clinical diagnoses of depression. We therefore chose the Depressive Affect scale of the Millon Adolescent Clinical Inventory (MACI; Millon, Millon & Davis, 1993) to assess negative affect, as this scale is designed to assess depressive symptoms, but also provides information on a broad range of other affective features.

METHOD

Participants

Participants were 256 male and 107 female inner city, culturally diverse adolescent offenders enrolled in two ongoing NIH-funded HIV prevention projects in juvenile detention and a court-ordered treatment center. The sample approximated consecutive admissions to the program between 1998 and 2000. Participants were excluded from the study only if they refused to provide informed assent and/or their parents (or legal guardians) refused to provide written consent for participation. No participants suffered from severe cognitive or psychiatric impairments (e.g., psychosis) that would have compromised their ability to complete the assessment. All adolescents were fluent in spoken English.

The modal subject was a low income, ethnic or racial minority adolescent who abused alcohol, marijuana, and/or non-injection “crack” cocaine and resided in the urban inner city. The mean age of the sample was 15.72 (SD = 1.34; range 13 to 18), and the average level of education was 8.73 years (SD = 1.33). Subjects were 30.9% African American, 9.5% Non-Hispanic White, 31.2% Hispanic, 9.2% Haitian, and 19.2% of other ethnic backgrounds.

Assessment Procedures

Measures included the Depressive Affect scale of the Millon Adolescent Clinical Inventory (MACI), an inventory measuring HIV transmission risk behaviors, skills and attitudes as detailed below, and a measure of social desirability. All assessment procedures were conducted by experienced interviewers, trained to create a process sensitive to gender and cultural issues. To avoid interviewer drift and other contaminating factors, interviewers received ongoing supervision from a clinical psychologist for the duration of the study. Subsequent to informed

consent and parental consent, assessment measures were administered orally to facilitate accurate reporting, full completion, and to compensate for any literacy difficulties. Baseline assessments were administered one week after participants' admission and clearance from treatment staff that detoxification was adequately completed. This was done to minimize the effect of detoxification or withdrawal factors on test performance and to maximize accuracy of responses.

Interviewers were careful to ensure that respondents understood the meaning of each question, and would repeat or elaborate on questions if a respondent showed any confusion. Interviewers were trained to adopt a non-judgmental attitude during interactions in order to establish rapport and build trust. In addition, as suggested by Jemmott, Jemmott, and Fong (1992), efforts were made to motivate participants to respond accurately, thus reducing the likelihood that reports of sexual experiences were either minimized or exaggerated. Participants were informed that their responses were confidential and would be used to help improve HIV prevention programs for other adolescents in substance abuse treatment.

Measures

Negative Affect—The Depressive Affect scale, based on 33 items from the *Millon Adolescent Clinical Inventory (MACI)* was used, since this scale taps the most common negative affective symptomatology experienced by our sample. Other advantages of the MACI Depressive Affective Scale are that, like other MACI clinical scales, item content has been developed to operationalize formal diagnostic symptoms, and the scale has demonstrated adequate reliability and validity across a wide variety of settings (Davis et al., 1999; McCann, 1997; Millon, Millon & Davis, 1993). Sample items include: "I see myself as falling short of what I'd like to be," and "Things in my life just go from bad to worse." On the Depressive Affect scale, higher scores indicate a notable decrease in effectiveness, feelings of guilt and fatigue, a tendency to be despairing about the future, social withdrawal, loss of confidence, and diminished feelings of adequacy and attractiveness.

The Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) was used to assess biases in self-report due to social desirability. A short form of the instrument was used that includes 10 dichotomous response (yes/no) items and yields a total score (Ballard, 1992; Strahan & Gerbasi, 1972; Reynolds, 1982). Higher scores on this scale indicate an attempt to appear socially attractive, morally virtuous, and emotionally well-composed.

Sex risk and drug risk variables were derived using modified versions of sexual risk assessment measures (Gibson & Young, 1994; Otto-Salaj, Heckman, Stevenson, & Kelly, 1998) that have been adapted by Malow and Ireland (1996; Malow et al., 2001). Measures included retrospective recall of numbers of sex partners, unprotected sex acts, and condom use during the previous 3- and 6-month periods, as well as unprotected sex acts proximal to marijuana, alcohol or cocaine use during the previous 3 months. HIV risk variables included Perceived Susceptibility (perceived risk for contracting HIV), AIDS-Related Anxiety (anxiety about becoming HIV infected). Sexual Self-Efficacy (confidence to adopt and maintain HIV preventive behaviors), Personal Attitudes Toward Condoms, Sexual Attitudes (importance placed upon peer, partner and parental approval of condom use), and Prevention Beliefs (belief that using condoms and being monogamous can prevent HIV/STD infection). The Sexual Attitudes scale has a 5-point Likert format with response options ranging from "extremely unimportant" to "extremely important" and yields a mean score with a possible range of 1 to 5. The remaining scales have 4-point formats with response options ranging from "strongly disagree" to "strongly agree," and total scores ranging from 1 to 4. These scales have been shown to mediate HIV risk and have demonstrated validity and reliability among similar samples (Gibson & Young, 1994; Malow & Ireland, 1996).

Based on focus groups and in-depth interviews, the research team has added items to the survey and modified the language to be culturally sensitive, reflecting the local terminology of the target population. In addition, we adapted a tabular format to facilitate administration, and a calendar-based methodology (i.e., a Time-Line Follow-Back Procedure; Sobell & Sobell, 1980, 1995) to promote accurate recall. Items measuring substance use elicited the frequency of alcohol, marijuana, cocaine and poly-substances use during the three months prior to being in a restricted environment. This reporting period was chosen because recall has been shown to be reliable up until 3 months (Kauth, St. Lawrence, & Kelly, 1991).

The Adolescent Drug Abuse Diagnosis Questionnaire (ADAD; Friedman & Utada, 1989) is a structured interview recommended by the Center for Substance Abuse Treatment consensus panel (McLellan & Dembo, 1993) for comprehensively assessing demographic, social and psychological function among drug abusing adolescents. For the current study, we only used relevant sections to gather sociodemographic data, including age, level of education, and ethnicity from each subject.

The Behavioral Intentions Scale is a 7-item measure that assesses participants' intent to take future actions to reduce HIV risk (e.g., "I will use a condom the next time I have sex"). This scale was derived by Klinkenberg (personal communication March 1998) by simplifying a measure used by Otto-Salaj, Heckman, Stevenson and Kelly (1998) and by adding an item about drinking ("I will use a condom the next time I have sex even if I've been drinking"). A sub-sample ($n = 86$) of the subjects described above were used to pilot test this scale. A Cronbach's alpha of .94 for the behavioral intentions scale was calculated, indicating that the scale is internally consistent.

Knowledge about HIV transmission was assessed using an 18-item true/false questionnaire (adapted from St. Lawrence, Jefferson, Alleyne & Brasfield, 1995). Participants received one point for each correctly answered item. Sample items include: "A person can get HIV from having sex one time," and "Condoms make intercourse completely safe." Participants received one point for each correctly answered item.

Condom use skills were assessed by rating the participant's ability to properly enact 9 steps in correctly placing a condom on a penile model (adapted from Sorensen, London, & Morales, 1991, p. 106). Participants were rated for successful completion of items such as, "Opened the condom package without tearing the condom," and "Condom rolled to the base of the penile model." Scores reflect the total number of correct steps.

Statistical Analyses

The low depressive symptom group was defined, by median split, as those who scored seven or below on the depressive scale of the MACI, and the high depressive symptom group was defined as those who scored eight or higher. Preliminary analyses revealed no proportional differences between groups by data collection site, $\chi^2(N = 363) = .54, p = .46$. Means, standard deviations, frequencies and other descriptive statistics were derived to characterize the sample. Analyses of covariance (ANCOVAs) were used to test for group differences on sex risk behavior, frequency of substance use, HIV related attitudes and beliefs, and condom use skills, controlling for age, gender, social desirability and data collection site. Both gender and age have been noted as significantly associated with HIV risk behavior (Jemmott & Jemmott, 2000; Kingree, Braithwaite & Woodring, 2000; Newman & Zimmerman, 2000). All analyses controlled for socially desirable response bias, as assessed by the Marlowe-Crowne scale in order to avoid the shared measurement error introduced by the validity scales included in the MACI. This procedure helped to ensure validity of responses represented in the analyses (Malow et al., 1998).

RESULTS

Substance Use, HIV/AIDS Risk Attitudes, Beliefs, Skills and Behavior

Means and standard deviations for each group and the total sample, as well as F-ratios for ANCOVAs, are reported in Table 1. Those participants rated high on negative affect reported more frequent marijuana, alcohol, and cocaine use, after controlling for age, gender, and socially desirable responding. In addition, those high on negative affect reported significantly more sexual partners during the last 6 months, a higher percentage of unprotected sex during the last 3 and 6 months, and a higher incidence of lifetime STDs (see Table 1).

High negative affect participants also reported higher perceived susceptibility to HIV, higher prevention beliefs, more favorable intentions to engage in safer sex, and were more skilled at using condoms. Furthermore, those high on negative affect reported less favorable condom attitudes, less sexual self-efficacy, and were less knowledgeable about HIV than those with low negative affect. No significant group differences were found for number of partners during the last 3 months, anxiety about contracting HIV, percentage of unprotected sex when high on alcohol, marijuana or cocaine, nor percentage of unprotected vaginal sex acts during the last 3 and 6 months (all p 's > .05).

DISCUSSION

Overall, participants reported relatively high percentages of risk behavior such as unprotected vaginal sex in the previous six months, as well as high frequencies of substance use, particularly marijuana, alcohol, and cocaine, which supports previous research on juvenile offenders (Canterbury et al., 1995; Malow et al., 1997). Those with lower negative affect scores reported more positive attitudes pertaining to the use of condoms, scored higher on a measure of HIV knowledge, and reported more perceptions of sexual self-efficacy, but less perceptions of HIV vulnerability than "high negative affect" adolescents. The negative affect adolescents reported a higher mean number of lifetime STDs and actually had better observed condom use skills than the adolescents with less negative affect. Perhaps most significantly, with respect to specific risk behaviors, those adolescents scoring higher on the MACI negative affect scale reported more sexual partners, more unprotected sex, and more alcohol, marijuana and cocaine use than those classified as "low negative affect."

It is not surprising that this sample of AOD abusing adolescent offenders reported such high levels of HIV risk behavior, as this has been noted in previous studies (e.g., Canterbury et al., 1995; Malow et al., 2001). Our findings are similar to what is reported in the limited empirical literature pertaining to HIV risk behavior and negative affect among adolescents. Specifically, the "negative affect" adolescents reported more high risk substance use and sexual behavior, thus increasing their vulnerability to HIV, as compared to the adolescents reporting less negative affect. It is particularly interesting that the "high-negative affect" adolescents reported *more* perceived susceptibility to HIV. Such perceptions may be based both on realistic awareness of their own risk behavior, as well as the tendency of depressed individuals to more accurately describe themselves and attribute negative events internally (Alloy & Abramson, 1979).

Our findings expand other research examining the link between affect and HIV risk among adults (Alegria et al., 1994; Joe, Knezek, Watson, & Simpson, 1991; Morris & Reilly, 1987), as well as the limited research pertaining to adolescent offenders and HIV risk (e.g., Canterbury et al., 1995; DiClemente, 1991). In light of the alarmingly increasing numbers of adolescents who are HIV infected (CDC, 2000), together with the increased risk of both negative affect and drug use among adolescent offenders, this population should be emphasized in designing HIV risk reduction programs that consider the added risk of mood and affective symptoms.

Specifically, HIV risk reduction programs targeting sites such as juvenile detention centers and related court-ordered treatment programs would benefit by screening and intervention approaches which explicate more focus on symptoms of negative affect (e.g., anger, depression) in addition to the traditional emphasis on risk behavior. In addition to affective difficulties, depressed youth frequently have poor psychosocial, academic, and family functioning, which highlights the importance of early identification and prompt treatment of such symptomatology (Lewinsohn et al., 1994b, 1997a; McCauley & Myers, 1992; Warner, Mufson, & Weissman et al., 1995).

One study limitation to be considered here is our reliance on self-reported data. Because of the sensitivity of sexual behavior and substance use issues addressed in the assessments, social desirability, privacy, embarrassment, and fear of reprisals may lead youths to conceal or underreport (Malow et al., 1998). However, several strategies, including controlling for social desirability in the analyses and training of assessors to motivate honest responding, were utilized to maximize internal validity. Another study limitation is that, because of the nature of the sample, the current findings can only be generalized to adolescents in juvenile detention or associated court-ordered treatment. Also, the cross-sectional design prohibits any causative inferences including whether depressive affect may be an antecedent or a consequence of risky behavior. Moreover, negative affect is not exclusively defined by depression or “depressive affect” and includes other states such as anger. Different negative affect states were not categorized and therefore could not be assessed in terms of frequency in the context of this study. However, such classification could be an important mediator in the association between negative affect and risk behavior. For example, Crepaz and Marks (2001) suggest, that high arousal forms of negative affect such as anger and anxiety may be more involved in leading to unsafe sexual practice. Conversely, based on cognitive dissonance theory (Festinger, 1957), it could be argued that decreased arousal or depressive types of negative affect are related to failure to fulfill one’s intentions to engage in safe sex. Finally, because of the study’s cross-sectional research design, additional studies using longitudinal designs will be helpful to evaluate the significance of negative affect in influencing adolescent sexual risk behaviors and any causal relationships between mental health problems, social environment variables and sexual risk behaviors.

In future investigations, a larger scale study allowing for a path analysis approach would allow causal inferences concerning HIV risk behavior and negative affect. Additionally, multiple measures of negative affect would permit clarification of types of negative affect (e.g., depression versus anger) and their causal associations with particular patterns of risk behavior. Most importantly, outcome investigations of HIV prevention programs with adolescent offenders that target and assess the mediating impact of such symptoms on HIV risk outcomes could have a significant impact on the design of such programs and subsequent HIV prevention among this high risk population.

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ANCOVAS Comparing Low and High Negative Affect Groups on Sex and Drug Risk Behaviors and HIV Relevant Attitudes and Skills

TABLE 1

Variable	Total Sample	High Negative Affect	Low Negative Affect	F	p
Marijuana use last 3 months	28.47 (42.23)	30.03 (50.24)	26.91 (32.37)	3.38	.005
Alcohol use last 3 months	6.36 (12.50)	7.20 (13.77)	5.52 (11.06)	3.51	.004
Cocaine use last 3 months	3.67 (12.00)	4.72 (13.83)	2.61 (9.76)	3.72	.003
Number of partners last 3 months	1.88 (3.90)	2.07 (3.44)	1.70 (4.30)	.77	.575
Number of partners last 6 months	2.74 (4.16)	3.15 (5.03)	2.33 (3.02)	2.55	.028
Percent unprotected sex last 3 months	38.83 (40.24)	38.95 (39.96)	38.70 (40.64)	3.90	.002
Percent unprotected sex last 6 months	41.64 (39.45)	42.98 (39.18)	40.29 (39.77)	4.39	.001
Percent unprotected sex when high on alcohol	13.04 (32.21)	16.32 (35.01)	9.73 (28.85)	1.67	.142
Percent unprotected sex when high on cocaine (last 3 months)	5.91 (22.56)	6.78 (23.91)	5.02 (21.15)	1.01	.410
Percent unprotected sex when high on marijuana (last 3 months)	18.01 (34.60)	20.03 (36.02)	15.98 (33.09)	1.84	.104
Percent unprotected vaginal sex last 3 months	26.97 (39.17)	27.39 (38.77)	26.54 (39.67)	1.56	.171
Percent unprotected vaginal sex last 6 months	28.39 (39.32)	29.95 (38.94)	26.83 (39.73)	1.72	.129
Anxiety about contracting HIV	3.14 (.66)	3.20 (.63)	3.07 (.68)	1.43	.212
Condom attitudes	3.24 (.37)	3.20 (.38)	3.28 (.35)	4.44	.001
Condom use skills	4.82 (2.19)	4.91 (2.16)	4.73 (2.23)	3.04	.011
Knowledge about HIV	13.38 (2.91)	13.01 (3.02)	13.75 (2.75)	9.72	.001
Perceived susceptibility	2.32 (.63)	2.42 (.60)	2.21 (.64)	3.81	.002
Prevention beliefs	2.68 (.47)	2.71 (.44)	2.66 (.50)	5.33	.001
Sexual self-efficacy	3.24 (.58)	3.16 (.64)	3.33 (.48)	4.68	.001
Behavioral Intentions	22.48 (5.32)	22.73 (5.43)	22.23 (5.22)	2.18	.054
Lifetime number of STD's	.091 (.36)	.12 (.87)	.07 (.34)	3.08	.010