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Psychiatric Symptom Patterns, Proximal Risk Factors, and Sexual Risk Behaviors Among Youth in Outpatient Substance Abuse Treatment

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Abstract

The purpose of the current study was to classify adolescents receiving outpatient treatment for alcohol or other drug (AOD) problems via self-reports of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. American Psychiatric Association, 1994) psychiatric symptoms, and to identify group differences in measures of proximal risk factors for sexual risk behaviors (SRBs) and self-reported SRBs. Structured interviews were administered to 300 adolescent clients (202 males, 98 females; $M=16.22$ years; $SD=1.13$) receiving treatment services as part of a larger National Institute on Alcohol Abuse and Alcoholism (NIAAA)-funded randomized clinical trial. Ward's method cluster analysis (Ward, 1963) was used to classify adolescents into distinct groups based on psychiatric symptom profiles. A multivariate analysis of variance was used to identify significant between-cluster differences in self-reported SRBs and proximal risk factors for SRB. Substantial heterogeneity in patterns of psychiatric symptoms was documented in this treatment sample. Membership in certain psychiatric symptom clusters was associated with several self-reported SRBs and correlated proximal risk factors. Among youth receiving AOD treatment, interventions to promote HIV/STI risk reduction may need adaptation for those with differing psychiatric profiles.

Keywords

sexual risk behaviors; AOD; person-centered analysis; comorbidity; HIV

Current prevalence rates of sexually transmitted infections (STIs), including HIV among youth, are pressing public health concerns worldwide. Current statistics for the United States document that, compared to many adult age strata, late adolescents and young adults are at elevated behavioral risk for exposure to HIV as well as other STIs, for example, chlamydia, gonorrhea, and syphilis (aCenters for Disease Control & Prevention [CDC], 2006a). There is a critical need to reduce risk for HIV/STI transmission among youth, and in particular among youth manifesting multiple-risk factors for HIV/STI exposure (CDC, 2006a; D'Angelo, Samples, Rogers, Peralta, & Friedman, 2006; Donenberg & Pao, 2005). At present, STIs are among the most common preventable infections in the United States, with

15 million new cases reported each year (Weinstock, Berman, & Cates, 2004), approximately half of which occur among adolescents.

Research has documented significant associations between alcohol or other drug (AOD) use problems and sexual risk behaviors (SRBs) in both adolescent and adult populations (Bailey, Pollock, Martin, & Lynch, 1999; Duncan, Strycker, & Duncan, 1999; Neal, Fleming, Green, & Ward, 1997; Ross, Hwang, Zack, Bull, & Williams, 2002). For example, adolescents who sought treatment for AOD use problems reported an earlier age of onset of sexual activity, greater numbers of sexual partners, and fewer consistent condom use, compared to youth without AOD use problems (e.g., Bailey et al., 1999; Duncan et al., 1999; Guo et al., 2002; Jainchill, Yagelka, Hawke, & De Leon, 1999; Malow, Dévieux, Jennings, Lucenko, & Kalichman, 2001). An important SRB variable among adolescents with AOD use problems is AOD use immediately before or during sexual activity. Research has documented that adolescents who engaged in AOD use while having sex are significantly less likely to use condoms or other forms of contraception, compared to those who abstain from AOD use during sex (Jainchill et al., 1999; Millstein & Moscicki, 1995; Tapert, Aarons, Sedlar, & Brown, 2001).

Psychiatric Disorders and SRB Among Adolescents With AOD Use Problems

Co-occurring psychiatric symptoms and diagnoses among youth with AOD use problems have been shown to have complex relations with health risk behaviors including SRB (Brown, Danovsky, Lourie, DiClemente, & Ponton, 1997; Kotchick, Shaffer, Forehand, & Miller, 2001). Among youth who meet diagnostic criteria for conduct disorder (CD), research has described significantly elevated risk for the development of a wide array of related problem behaviors and health risk behaviors, including SRB (Booth & Zhang, 1997; Burnette & Newman, 2005; Helstrom, Bryan, Hutchison, Riggs, & Blechman, 2004; Tubman, Gil, Wagner, & Artigues, 2003). In contrast, the potential influence of internalizing psychiatric symptoms on health risk behavior such as SRB has been described as inconsistent. Some studies have reported that specific forms of anxiety and affective disorders are associated with increased behavioral risk factors for HIV/STI exposure (e.g., Lehrer, Shrier, Gortmaker, & Buka, 2006), whereas other studies suggested that anxiety symptoms served a potentially protective function with regard to SRB participation (Tubman, Windle, & Windle, 1996).

Associations have been documented between cumulative lifetime psychiatric disorders and self-reported SRBs in both community and clinical samples of adolescents (Brown et al., 1997; Tubman et al., 2003). Among adolescents receiving treatment for AOD use problems, there is often significant co-occurrence among psychiatric symptoms (Donenberg, Emerson, Bryant, Wilson, & Weber-Shifrin, 2001; Houck et al., 2006). At present, however, relations between specific patterns of co-occurring psychiatric symptoms and SRBs, particularly among adolescents receiving treatment for AOD use, are not well understood. Therefore, the first aim of the current study is to identify the extent of heterogeneity in the patterning of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [*DSM-IV*], American

Psychiatric Association, 1994) psychiatric symptoms in a multiethnic sample of adolescents receiving AOD treatment services. The significance of this descriptive goal is related to the selection of specific treatment modalities as well as the potential customization of the core or surface features of prevention or treatment materials to meet the needs of clients with specific psychiatric profiles.

Although available research documents significant associations between co-occurring psychiatric disorders and SRB participation, modifiable mechanisms underlying these relations remain poorly understood (Brown et al., 1997). Significant progress in developing effective HIV/STI prevention programs for adolescents with co-occurring AOD problems and psychiatric symptoms will be enhanced by identifying proximal risk and protective factors that may mediate relations between psychiatric symptoms and SRBs (Brown et al., 1997; Kotchick et al., 2001). Modifiable proximal cognitive or behavioral risk or protective factors can be integrated into AOD treatment protocols to promote efforts to reduce HIV/STI transmission among youth receiving AOD treatment services (Kazdin & Nock, 2003; Salazar, Crosby, & DiClemente, 2005). For example, Lescano, Brown, Miller, and Puster (2007) reported that among youth with psychiatric disorders, condom use self-efficacy was associated significantly with use of self-protective behaviors. However, relations between multivariate patterns of psychiatric symptoms and specific putative proximal mediators of SRBs remain understudied. Therefore, a second aim of this report is to explore whether multivariate patterns of psychiatric symptoms are related to (a) specific profiles of modifiable proximal risk and protective factors and (b) self-reported SRBs among youth receiving AOD treatment services.

In the current study, variables identified previously as mediators of relations between psychiatric symptoms and SRBs among youth were investigated as proximal risk and protective factors for SRBs among adolescents receiving AOD treatment services. Specifically, groups of adolescents categorized via similarity in patterns of self-reported psychiatric symptoms were compared to identify between-groups differences in mean scores for proximal risk and protective factors for expression of SRBs. The following putative proximal risk and protective factors were selected as relevant, based on their empirically documented relations with adolescent self-reports of SRBs in existing prevention-oriented research: alcohol-sexual behavior outcome expectancies (LaBrie, Schiffman, & Earleywine, 2002; Schafer & Leigh, 1996), condom use self-efficacy (Abbey, Parkhill, Buck, & Saenz, 2007; Lescano et al., 2007), condom use decisional balance (Prochaska et al., 1994; Semaan, Lauby, O'Connell, & Cohen, 2003), sexual risk refusal anxiety (Ross, Caudle, & Taylor, 1991), condom interaction anxiety (Basen-Engquist et al., 1999), and condom use inhibition (Dermen & Cooper, 1994).

Documentation of between-groups differences in scores for proximal risk or protective factors for HIV/STI exposure by membership in a typology constructed from patterns of co-occurring psychiatric symptoms is likely to improve our understanding of how adolescent psychopathology may influence response to HIV/STI risk reduction interventions. Comparison of descriptive profiles across such a typology may identify significant amenability to treatment factors relevant to the customization of HIV/STI prevention services to address the needs of adolescents reporting significant psychopathology (Brown et

al., 1997; Noar, Benac, & Harris, 2007). Similarly, documentation of heterogeneity in adolescents' psychiatric symptoms and their associations with health risk behaviors (e.g., AOD use patterns) can be used to enhance AOD treatment protocols to include more focused content, to address cognitions and behaviors associated with specific psychiatric symptom subtypes, and to reduce risk for posttreatment relapse (e.g., Boles, Joshi, Grella, & Wellisch, 2005).

The Current Study

The purpose of the current study was to document heterogeneity in patterns of co-occurring psychiatric symptoms among adolescents receiving outpatient treatment services for AOD use problems. It was hypothesized that subgroups identified with more extensive and severe patterns of psychiatric symptoms would report higher scores for proximal risk factors and lower scores for protective factors for sexual risk behaviors as well as higher scores for self-reported sexual risk behaviors. However, no hypotheses were made with regard to differences in relations between specific psychiatric symptom profiles and (a) proximal risk or protective factors for SRBs or (b) self-reported SRBs. A person-centered analytic approach (i.e., Ward's method cluster analysis [Ward, 1963]) was used to classify adolescent clients into empirically distinct and nonoverlapping groups, based on multivariate configurations of self-reported psychiatric symptoms (von Eye & Bergman, 2003; von Eye & Bogat, 2006). The purpose of the analysis was to classify this treatment sample of adolescents into homogeneous groups based on their psychiatric symptom counts and to form descriptive profiles of proximal risk and protective factors for participation in SRB. Between-cluster differences in scores for modifiable cognitive or behavioral constructs were examined to identify distinct patterns of psychiatric symptoms associated significantly with differential propensity to engage in SRB.

Method

Participants

The sample consisted of 300 adolescents, including 202 males (67.3%) and 98 females (32.7%), receiving AOD use treatment services at two outpatient facilities in South Florida. The age of the participants ranged from 12 to 18 years old ($M=16.22$ years; $SD=1.13$). The sample was ethnically diverse and included 79 (26.3%) non-Hispanic White, 108 (36.0%) Hispanic White, 27 (9.0%) Hispanic Black, 64 (21.3%) African American adolescents, and 22 (7.3%) adolescents from other racial/ethnic groups. With regard to nativity, 245 (81.7%) of the participants were born in the United States, while out of the entire sample, 138 (46.0%) of their fathers and 156 (52.0%) of their mothers were also born in the United States. The majority of the sample ($n=222$, 74.0%) reported their mother, their father, or both as primary caregiver(s). Over half of the participants ($n=157$, 52.3%) reported repeating one or more school grades.

Procedure

Adolescent clients were approached within 1 week of enrollment in outpatient AOD treatment services and invited to participate in the brief motivational HIV/STI risk reduction

intervention from which data for the current study were drawn. Each adolescent client was screened for sexual activity participation during the last 6 months as an inclusion criterion. Adolescents who: (a) were not sexually active during the previous 6 months; (b) exhibited significant cognitive deficits or developmental delays; (c) reported current suicidality; or (d) did not provide assent in addition to parental consent were excluded from study participation. Next, adolescents were assessed for *DSM-IV* psychiatric symptoms and were administered a battery of questionnaires before being enrolled in the HIV/STI risk reduction. In the broader NIAAA-funded intervention program, participants completed a 60 to 90 min assessment focused on multiple domains including: substance use, sexual risk behaviors, demographics as well as putative mediators and moderators of intervention impact. Trained graduate students collected data using a structured interview protocol on laptop computers at the facilities in which clients were receiving AOD treatment services. Active consent was obtained from both adolescents and a primary caregiver via procedures approved by the Institutional Review Board (IRB) at the sponsoring university. Participants were compensated \$25.00 for completing the baseline assessment from which data were drawn and analyzed for the current study.

Measures

DSM-IV psychiatric symptoms—Symptoms diagnostic of lifetime and past year *DSM-IV* psychiatric diagnoses were assessed via the Brief Michigan Version of the Composite International Diagnostic Interview (CIDI-UM; Kessler et al., 1994). The CIDI is a comprehensive, fully structured diagnostic interview developed by the World Health Organization (WHO, 1990) and based in part on the Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981). The CIDI is administered by trained lay interviewers as a means to assess disorders defined by the *DSM-IV* of the American Psychiatric Association (1994). The computerized delivery of items on the CIDI-UM included appropriate skip patterns and probe questions, and did not allow out-of-range responses, simplifying the administration of the instrument. This instrument was developed to standardize the assessment of disorders in community settings (Kessler & Üstün, 2004). The CIDI-UM has excellent interrater reliability, good test-retest reliability as well as sufficient validity based on concordance with clinical judgments and structured clinical interviews (Kessler et al., 1994; Wittchen, 1994). Component variables in cluster analyses conducted for the current paper were six aggregated symptom score categories derived from the CIDI. These included: (a) conduct disorder (CD)/oppositional defiant disorder (ODD); (b) affective disorders (major depressive disorder, dysthymia); (c) anxiety disorders (generalized anxiety disorder [GAD], specific phobia, social phobia, panic disorder); (d) alcohol abuse and dependence disorders; (e) drug abuse and dependence disorders; and (f) attention deficit hyperactivity disorder (ADHD), including both the inattentive and hyperactive subtypes.

In addition, current suicidal risk was assessed using five self-report items ($\alpha = .78$, current sample) from the General Health Questionnaire (GHQ; Goldberg & Hillier, 1979). Items were rated from (1) *not a lot* to (4) *much more than usual*. Participants rated how often they: “felt that life is not worth living,” “thought about doing away with yourself,” “could not do anything because your nerves were too bad,” “wishing you were dead and away from it all,”

and “idea of taking your life kept coming into your mind.” These items were included to validate the cluster solution by examining between-cluster differences in indicators of extreme distress.

TLFB–SRB—The standard Timeline Follow-Back Sexual Risk Behavior (TLFB) instrument (Sobell & Sobell, 1992, 1996; Sobell, Sobell & Ward, 1980) was modified to collect data regarding adolescents’ self-reported sexual risk behavior, including unprotected intercourse, number of partners, co-occurring substance use, and sexual behavior (Carey, Carey, Maisto, Gordon, & Weinhardt, 2001). An adapted calendar format was used to assist in the recall of days when target SRBs occurred. Participants completed the TLFB–SRB for the 180 days immediately prior to the baseline assessment. Similarly adapted TLFB calendar methodology has been used in published research to assess SRBs in persons with AOD use problems such as adult men who have sex with men (MSM; Midanik et al., 1998) and psychiatric inpatients (Carey et al., 2001) with adequate reliability and validity.

Several additional items were used as indicators of sexual risk for HIV/STI exposure. Participants were asked to report the date of their first sexual experience, that is, “What is the month and year when you first had vaginal or anal sex?” Participants were also asked to report their total number of sex partners during the previous 6 months. In addition, participants were asked to report how often during the past 6 months they or a partner (a) drank alcohol before or during sex or (b) used any drugs to get high or intoxicated before or during sex. These last two items used a scale ranging from 5 (*always*), 4 (*usually*), 3 (*sometimes*), 2 (*rarely*), or 1 (*never*). These items were included because they are recognized risk factors for HIV/STI exposure (Kalichman, Tannenbaum, & Nachimson, 1998; Millstein & Moscicki, 1995). Finally, a composite SRB variable was created to measure cumulative SRBs, including all SRB indexes with the exception of age of onset. Therefore, the composite variable incorporated four SRB indexes that were dichotomized (i.e., *yes* or *no*). Sexual risk behavior indexes were coded 1 if participants reported: (a) using alcohol before or during sex; (b) using drugs before or during sex; (c) more than two sex partners during the previous 180 days; or, any unprotected intercourse during the previous 180 days. Negative responses to the four variables were coded 0 values on the composite SRB variable ranged from 0 ($n = 34$, 11.4%), 1 ($n = 47$, 15.8%), 2 ($n = 96$, 32.3%), 3 ($n = 80$, 26.9%), to 4 ($n = 40$, 13.5%), with a mean of 2.15 ($SD = 1.18$). This variable was normally distributed (skewness = $-.22$, kurtosis = $-.73$). Adolescents reported using alcohol before sex (59.6%), using drugs before sex (69.0%), more than two sex partners (41.7%), and unprotected intercourse (60.3%).

Risky sex expectancies—Four items from an instrument published by Dermen and Cooper (1994) were included to assess adolescents’ perceptions of the degree to which alcohol promotes risky sexual behavior (e.g., via disinhibition, sexual enhancement). The four item scale ($\alpha = .81$, current sample) uses response formats ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Sample items include “after drinking I am less likely to use birth control” and “after drinking I am less likely to take precautions before sex.” This scale has also shown adequate reliability in previous research with college students (La Brie, Tawalbeh, & Earleywine, 2006; $\alpha = .91$).

Self-Efficacy for condom use—A 5-item scale (Galavotti et al., 1995) was used to measure adolescents' perceived self-efficacy to implement condom use with primary partners. Adolescents rated how confident they felt regarding the implementation of condom use with a main partner in a range of situations, that is, with varying levels of decisional pull. All items were rated on a 5-point Likert scale ranging from 1 (*not at all confident*) to 5 (*extremely confident*). Situations included, “when you have been using alcohol or other drugs,” “when you think your partner might get angry.” Reliability coefficients ($\alpha = .92$) referring to primary partners of participants in the current study demonstrated excellent reliability.

Decisional balance—A 10-item measure (Grimley, Prochaska, Velicer, & Prochaska, 1995) was used to assess the perceived pros and cons (i.e., five pros, five cons) of using condoms with primary partners. Items assessed the perceived advantages (e.g., being safer, protecting a partner, being responsible) and disadvantages (e.g., sex feels unnatural, partner would be angry, partner might feel lack of trust) related to condom use with a main partner. Adolescents rated how important each statement was to their decision to use or not use condoms, ranging from 1 (*not important*) to 5 (*extremely important*; Grimley et al., 1995). In the current sample, reliability coefficients for perceived pros ($\alpha = .67$) and cons ($\alpha = .73$) for condom use were lower than in the original Grimley et al. study involving a college sample (.82 to .83), but still acceptable for research purposes.

Condom related anxiety—The degree to which adolescents were tense or anxious when they (a) negotiated or refused to participate in sexual interactions that increase risk for HIV/STI exposure or (b) talked about condoms or purchased them was measured via items from the AIDS-Related Social Skills (ASAS) questionnaire (Ross, Caudle, & Taylor, 1989). Reliability coefficients for the Risk Refusal/Negotiation scale (11 items, $\alpha = .83$) and the Condom Interaction scale (8 items, $\alpha = .85$) were good in the current multiethnic treatment sample. This measure appears to have a stable factor structure and high internal consistency (Venier, Ross, & Akande, 1998). For the Risk Refusal/Negotiation scale, sample items include: “How uncomfortable would you feel, (a) saying no to sex with someone who has had sex with multiple partners, (b) saying no to sex with someone you just met.” For the Condom Interaction scale, sample items include: “How uncomfortable would you feel, (a) going to the store and asking to buy condoms, (b) asking boyfriend or girlfriend about previous sexual history.” All items have a 5-point response format, ranging from 1 (*not at all uncomfortable*) to 5 (*extremely uncomfortable*).

Condom inhibition conflict—The degree to which adolescents experienced inhibition conflict regarding condom use when they engaged in intercourse was assessed using the three item measure evaluated by Dermen and Cooper (2000) in a sample of 308 college students. In the current study the measure demonstrated very good reliability ($\alpha = .86$). A sample item was, “I have a hard time deciding whether or not to use a condom or asking my partner to use one.” Each item has a 6-point response format from 1 (*disagree a lot*) to 6 (*agree a lot*).

Results

Table 1 summarizes Pearson bivariate correlations among continuous variables and Spearman correlations among ordinal variables used in subsequent analyses for 297 participants with complete data. Statistically significant correlation coefficients with p values less than .05 are noted. The CIDI-derived symptom count variables are correlated significantly with several indicators of SRB, and to a lesser extent, several proximal risk and protective factors for HIV/STI exposure.

Between-Cluster Differences in Psychiatric Symptom Counts

Ward's method cluster analysis (Ward, 1963), a hierarchical clustering method, was used because this iterative agglomerative procedure applies strict variance minimization criteria for the selection of clusters based on their similarity (Romesburg, 2004). Previous research has documented that Ward's method is an efficient technique to construct well-defined clusters. Changes in the fusion coefficients associated with the agglomeration schedule guided the selection of an optimal five-part cluster solution that was verified via inspection of cluster sizes, between-cluster differences on component variables, and the magnitude of associated F tests. The Pillai's trace multivariate test statistic indicated an overall pattern of significant differences across the five psychiatric symptom clusters, $V = 1.931$, $F(24, 1160) = 45.126$, $p < .001$. The overall effect size was $\eta^2 = .48$; suggesting that 48% of the variability among the psychiatric symptom count variables was accounted for by the psychiatric symptom clusters. Univariate F statistics documented significant differences ($p < .001$) by cluster membership for each psychiatric symptom count variable. Between-cluster differences in psychiatric symptom count variables were examined further in post hoc comparisons using the Tukey's HSD test, summarized in Table 2. Cluster analysis was conducted using standardized psychiatric symptom count variables as component variables, but means summarized in Table 2 are based on nonstandardized scores to facilitate comprehension of results.

Between-cluster differences summarized in Table 2 demonstrate statistically significant differences in multivariate patterns of self-reported psychiatric symptoms in this treatment sample of adolescents. Cluster 1 ($n = 123$) reported the highest symptom counts for CD/ODD, with elevated ADHD symptom counts, but below average counts for the rest of the diagnostic categories assessed and is labeled the high CD/ODD cluster. In contrast, Cluster 2 ($n = 27$) reported the highest symptom counts for anxiety disorder diagnoses and elevated symptom counts for affective disorders, ADHD, and CD/ODD and is labeled the high internalizing cluster. Cluster 3 ($n = 80$) was characterized by low average symptom counts for anxiety and affective disorders, moderate symptom counts for substance abuse and dependence diagnoses, and elevated symptom counts for CD/ODD and ADHD and is labeled the moderate symptom cluster. Cluster 4 ($n = 21$) reported the highest symptom counts for affective disorders, ADHD, as well as substance abuse and dependence disorders, with elevated symptom counts for CD/ODD and anxiety disorders and is labeled the high symptom cluster. Cluster 5 ($n = 46$) reported the lowest average symptom counts for all diagnostic categories assessed and is labeled the low symptom cluster.

Psychiatric symptom cluster membership was associated with both gender, $\chi^2(4, N=297) = 22.66, p < .001$, and ethnicity, $\chi^2(16, N=297) = 34.76, p < .01$, but not with other demographic characteristics such as age or repeating a grade. Specifically, male adolescents were disproportionately members of the high CD/ ODD (71.5%), moderate symptom (72.5%), and low symptom (73.9%) clusters, whereas female adolescents were disproportionately members of the high internalizing (44.4%) and high symptom clusters (76.2%). With regard to ethnicity, non-Hispanic White adolescents were disproportionately members of the moderate symptom (31.3%) and high symptom (33.3%) clusters, whereas Hispanic White adolescents were disproportionately members of the high internalizing (40.7%), moderate symptom (42.5%), and high symptom (52.4%) clusters. Hispanic Black (15.2%) and other ethnicity (13.0%) adolescents were disproportionately members of the low symptom cluster. Finally, Black/African American adolescents were disproportionately members of the high CD/ODD (24.4%) and low symptom (41.3%) clusters. Therefore, the cluster with the most extensive patterning of past-year psychiatric symptoms (i.e., the high symptom cluster) was predominantly female whereas the members of the cluster with the lowest levels of psychiatric symptoms (the low symptom cluster) were more likely to self-identify as Black/African American, Black Hispanic or biracial than either non-Hispanic White or Hispanic White.

Between-Cluster Differences in Prevalence of Psychiatric Diagnoses

The five-cluster solution for the component variables (i.e., the six aggregated psychiatric symptom count variables) was validated further via an examination of associations between cluster membership and past year prevalence rates for CIDI–UM diagnoses in the sample (Aldenderfer & Blashfield, 1984; Mandara, 2003). Table 3 summarizes between-cluster differences in the past year prevalence rates for 14 *DSM–IV* psychiatric diagnoses derived from the CIDI–UM. Significant ($p < .001$) between-cluster differences in past year prevalence rates were identified for 10 of the 14 psychiatric diagnoses, indicating that diagnostic comorbidity was most common for the clusters reporting the highest scores for multiple aggregated CIDI symptom count variables. The high symptom cluster reported the highest past year prevalence rates for dysthymia, ADHD inattentive type, CD, and alcohol and drug abuse/dependence diagnoses. In contrast, the high internalizing cluster reported the highest prevalence rates for several anxiety disorders including: GAD, specific and social phobia and panic disorder as well as ADHD hyperactive–impulsive type.

Once again, these results highlighted significant heterogeneity in the manifestation of psychiatric disorders within this sample of adolescents receiving outpatient AOD treatment services. Specifically, significant between-cluster differences documented at the symptom level (see Table 2) were reflected in significant between-cluster differences in prevalence rates for specific *DSM–IV* disorders. In addition, between-cluster differences in summed self-rated indicators of suicidality (range = 5 to 20) were examined in post hoc comparisons using the Tukey's HSD test. Univariate analysis confirmed, $F(4, 297) = 16.96, p < .001$, that the high symptom cluster reported significantly higher average scores ($M = 8.76$) for distress followed by the high internalizing cluster ($M = 7.11$) compared to the rest of the clusters. The post hoc analysis showed no significant differences in reported levels of distress among

the high CD/ODD ($M = 5.98$), moderate symptom ($M = 5.55$) and low symptom ($M = 5.30$) clusters.

Between-Cluster Differences in Risk Factors for SRB

Table 4 summarizes between-cluster differences for a range of putative proximal risk factors for adolescent sexual risk behavior. The Pillai's trace multivariate test statistic indicated an overall pattern of significant differences among the proximal risk factors across the five CIDI-UM symptom frequency clusters, $V = .142$, $F(28, 1140) = 1.503$, $p < .05$. Univariate F statistics documented significant differences in proximal risk factor variable scores by cluster membership for alcohol-sexual behavior outcome expectancies, $F(4, 293) = 3.07$, $p < .05$; condom use efficacy with a primary partner, $F(4, 293) = 3.45$, $p < .01$; and condom use decisional balance—pros, $F(4, 293) = 3.34$, $p < .05$. In contrast, no significant between-cluster differences were identified for the ASAS sexual risk refusal scale, the ASAS condom interactions scale, condom use decisional balance—cons or condom use inhibition conflict.

Significant between-cluster differences in mean scores for proximal risk factor variables were examined further in post hoc comparisons using the Tukey's HSD test. The results suggested that significant between-cluster differences in scores for proximal risk and protective factors are associated with multivariate patterns of psychiatric symptoms. The low symptom cluster reported significantly higher scores for condom use self-efficacy than all other clusters. In contrast, the high internalizing cluster reported significantly lower scores for condom use decisional balance (pros), than the high CD/ODD cluster and the low symptom cluster, whereas the moderate symptom cluster reported a significantly lower average score for this variable than the low symptom cluster. The low symptom cluster reported significantly lower scores for positive alcohol-sexual behavior outcome expectancies than the high CD/ ODD, moderate symptom, and the high symptom clusters, but the low symptom cluster was not significantly different from the high internalizing cluster on this variable. Therefore, there was some between-cluster differentiation in mean scores for proximal risk and protective factors for HIV/STI transmission.

Table 4 also summarizes significant between-cluster differences for a range of SRB variables. The Pillai's trace multivariate test statistic indicated an overall pattern of significant differences for specific SRBs across the five CIDI symptom frequency clusters, $V = .224$, $F(24, 1108) = 2.739$, $p < .001$. Univariate F statistics documented significant differences in SRB variable scores by cluster membership for alcohol use before or during sex, $F(4, 284) = 5.05$, $p < .001$; drug use before or during sex, $F(4, 284) = 4.74$, $p < .001$; age at sexual debut, $F(4, 284) = 4.41$, $p < .01$; proportion of unprotected intercourse $F(4, 284) = 3.39$, $p < .01$; and the composite sexual risk behavior score, $F(4, 284) = 5.16$, $p < .001$. In contrast, no significant between-cluster differences were identified for adolescents' self-reported number of sex partners during the past 6 months. Post hoc comparisons using the Tukey's HSD test revealed that significant between-cluster differences in mean scores for SRB variables were largely attributable to significantly lower scores reported by members of the low symptom cluster, except in the case of unprotected intercourse, in which the mean scores for the high internalizing and low symptom clusters were not significantly different.

Discussion

The current study implemented an analytic strategy derived from a person-centered approach to the study of human behavior (e.g., Bergman, 2001; Bergman & Trost, 2006) to investigate relations between adolescent psychopathology and sexual risk behavior. First, cluster analysis was used to construct a typology of adolescents receiving AOD treatment services via their self-reported *DSM-IV* psychiatric symptoms. Second, descriptive profiles of modifiable psychosocial characteristics (e.g., alcohol-sex outcome expectancies, condom use self-efficacy) and sexual risk behaviors were constructed across cluster membership to improve current understanding of relations between patterns of psychiatric symptoms and proximal risk and protective factors for HIV/STI exposure. The use of cluster analysis with the current sample resulted in the documentation of significant heterogeneity in psychiatric symptoms, similar to previous studies employing this analytic strategy with samples of multiproblem youth (e.g., Houck et al., 2006; Potter & Jenson, 2003; Rowe, Liddle, Caruso, & Dakof, 2004; Stewart & Trupin, 2003). In addition, significant relations between multivariate patterns of psychiatric symptoms and participation in specific indices of SRB replicate findings in other community and clinical samples of stigmatized adolescents and adults (e.g., Brown et al., 1997; McClelland, Teplin, Abram, & Jacobs, 2002; Rothenberg et al., 2007; Tubman et al., 2003).

In the current treatment sample of adolescents, significant between-cluster differences in behavioral risk factors for HIV/STI exposure were found between the low symptom cluster and the four other clusters. For most post hoc between-groups comparisons of (a) proximal risk factors for HIV/STI exposure or (b) SRB variables, few significant differences were documented among the high CD/ODD, high internalizing, moderate symptom, and high symptom clusters due in part to the small sizes of the high internalizing and high symptom clusters. Despite the lack of statistically significant differences, it appears that adolescents with the greatest likelihood of participation in HIV/STI risk behaviors (i.e., the high internalizing and high symptom clusters are also the adolescents reporting the greatest extensiveness in patterns of psychiatric symptoms. Yet, there was some cross-cluster inconsistency in the patterning of behavioral risk factors for HIV/STI exposure. Although adolescents in the high symptom cluster reported the latest onset of sexual activity and the fewest sex partners during the previous 6 months, the low symptom cluster reported a significantly earlier mean age of sexual debut and the highest mean number of sex partners during the previous 6 months.

In this sample of adolescents receiving AOD treatment services, a homogenous subgroup of clients reporting low levels of psychiatric symptoms also reported a unique pattern of behavioral risk factors for HIV/STI exposure early age of sexual debut, multiple-sex partners, for example, Houck et al. (2006) and Taylor-Seehafer and Rew (2000). These findings highlight the multidimensional nature of behavioral risk for HIV/STI exposure (Cooper, 2002; Kotchick et al., 2001; Varghese, Maher, Peterman, Branson, & Skeketee, 2002). For example, group differences in age of sexual debut may be related in part to between-cluster differences in demographic variables. Existing research documents earlier coital onset among African American male adolescents, who are disproportionately represented in the low symptom cluster (e.g., Upchurch, Levy-Storms, Sucoff & Aneshensel,

1997). Similarly, a review of several nationally representative samples of adolescents documents higher proportions of African American male adolescents reporting multiple (i.e., four or more) sexual partners (Santelli, Lindberg, Abma, McNeely & Resnick, 2000). In contrast, the disproportionate representation of female adolescents in the high internalizing and the high symptom clusters would contribute in part to lower self-reported numbers of sex partners and later mean age at sexual debut. High prevalence rates for sexual abuse and other forms of childhood maltreatment experiences among female adolescents in this sample explain in part the overrepresentation of females in the high symptom cluster (Tubman, Oshri, Morris, Snyders, & Taylor, 2008). Thus, regardless of reported levels and patterns of psychiatric symptoms, homogenous subgroups within this clinical sample of adolescents experienced multiple-risk factors for HIV/STI exposure (Ammon, Sterling, Mertens, & Weisner, 2005). Further investigation is needed to determine how specific psychosocial and behavioral HIV/STI risk factors are influenced by adolescent psychopathology (e.g., Donenberg, Bryant, Emerson, Wilson, & Pasch, 2003).

Multiple factors may account in part for the degree of heterogeneity documented in the current sample with regard to the endorsement of specific psychiatric symptoms. First, the adolescent participants were referred to AOD treatment from a variety of sources (e.g., self-referrals, community agencies, juvenile diversion programs, public school system) that reflect diverse paths to accessing treatment services (e.g., arrest for drug possession, individual or family counseling, truancy). This would explain in part why all participants reported AOD use, but a subgroup (i.e., the low symptom cluster), was distinguished more by the presence of conduct problems than AOD use problems. Second, differences in the experience and reporting of specific psychiatric symptoms by racial/ethnic, gender, or social class groups may influence the rates of diagnoses of disorders across these groups (Alegría & McGuire, 2003). Third, the format used to administer questions regarding psychiatric symptoms (e.g., question ordering, use of screener questions) may influence systematically the symptoms endorsed by respondents (Jensen, Watanabe, & Richters, 1999; Robins & Cottler, 2004).

Implications for HIV/STI Prevention and AOD Treatment

Among sexually active adolescents receiving AOD treatment services, the presence of co-occurring psychiatric disorders is associated with elevated participation in SRBs. However, even the subgroup of clients who reported the lowest levels of psychiatric symptoms (i.e., the low symptom cluster) reported the highest levels of specific risk factors for HIV/STI exposure (i.e., early sexual debut, multiple-sex partners). Therefore, this sample contained multiple-homogenous groups presenting with specific, unique patterns of risk, and protective factors for HIV/STI exposure and transmission. In treatment, clients similar to those in the low symptom cluster require that AOD use problems be addressed. In contrast, counseling for HIV/STI risk reduction for adolescents in the low symptom cluster would focus on maintaining consistent condom use and increasing motivation for partner reduction, with developmentally and culturally appropriate presentations of these health behavior change strategies (Burrow, Tubman & Gil, 2007). Members of other clusters were distinguished from the low symptom cluster by significant differences in several behavioral risk factors for HIV/STI exposure (i.e., AOD use before or during sex, unprotected intercourse) as well by

their significantly higher scores for psychiatric symptoms. In addition, clients classified as having primarily behavioral, anxiety, and mood symptoms reported significantly lower scores for condom use self-efficacy and higher scores for positive alcohol-sexual outcome expectancies. Although the presence of psychiatric symptoms may exacerbate adolescents' vulnerability to impulsivity and unplanned sexual activity, substantial empirical evidence suggests that enhancement of specific behavioral skills and cognitive competencies results in both short- and long-term reductions in specific behavioral indexes of risk for HIV/STI exposure (DiClemente, Salazar, & Crosby, 2007; Ingram, Flannery, Elkavich, & Rotheram-Borus, 2008; Jemmott & Jemmott, 2000). In addition, evidence suggests that AOD treatment has positive effects on the HIV/STI risk behaviors of many subgroups of multiproblem youth (e.g., Joshi, Hser, Grella, & Houlton, 2001). It is crucial that HIV/STI prevention efforts, such as those enhancing specific behavioral skills and cognitive competencies, be integrated into AOD treatment and other health care settings. To enhance potential effectiveness, HIV/STI prevention efforts need to be developmentally appropriate and address prototypical psychological and social transitions of this period, for example, with regard to identity, autonomy, and sexuality (DiClemente et al., 2007; Solomon, Card, & Malow, 2006) for example, motivational techniques that can be utilized to guide adolescents toward making commitments to implement HIV/STI or AOD risk-reduction strategies based on their individual circumstances and goals. In addition, brief motivational interventions can be implemented and evaluated in a relatively short period of time, thus promoting the integration of HIV/STI prevention services in AOD treatment. However, for such integration to be effective in engaging adolescent clients, staff training must enhance both acceptance of adolescent sexuality and comfort in discussing specific sexual behaviors among adolescents (Auslander, Rosenthal, & Blythe, 2006; Sharpe, 2003).

When offered to clients assessed with significant psychiatric symptomatology, motivational interventions focused on HIV risk reduction goals may need to be adapted to enhance their congruence with clients' capacities. For example, to treat a client with co-occurring AOD and mood disorders, one may have to consider how the adolescent's perceived helplessness and hopelessness affects decision making and his or her ability to set future goals. To treat effectively a client with an AOD use disorder, a therapist would need to attend to how the adolescent's substance use affects his or her ability to make thoughtful and informed decisions regarding health risk behaviors. Other combinations of symptom profiles among dually diagnosed adolescents may present specific challenges for both AOD and HIV/STI risk reduction that would be more appropriately addressed with another brief treatment modality (e.g., Bender, Springer, & Kim, 2006). Thus, assessing multidimensional psychiatric symptom profiles at baseline can inform the customization of integrated AOD and HIV/STI risk reduction efforts. Adolescents with specific configurations of psychiatric symptoms may benefit substantially from tailored treatments, the surface and core features of which are congruent with the behavioral, cognitive, and emotional features of the clients' constellation of psychiatric symptoms (Noar et al., 2007).

Limitations

The current study had several limitations. First, the cross-sectional design of the study does not permit explicit causal statements regarding relations among psychiatric symptoms,

proximal risk, and protective factors for HIV/STI exposure and sexual risk behaviors, although the psychiatric symptoms reported are likely to have preceded the other outcomes assessed. Second, skip patterns in the computerized form of the CIDI used in the current study would tend to generate conservative patterns of psychiatric symptoms because they are likely to miss subsyndromal symptoms of depression, substance use problems, and PTSD (e.g., Peters, Issakidis, Slade, & Andrews, 2006; Wagner et al., 2000). This is likely to influence the clustering of symptoms while missing important sources of impairment in a treatment sample such as the one used in the current study. Third, although the current study incorporates a range of modifiable risk and protective factors that can be targeted in treatment as mediators, there are other important putative risk factors that were not included in the study (e.g., peer relationships, family functioning) as well as additional indicators of sexual risk behavior that could be assessed. Fourth, although findings of this study may generalize to other samples of adolescents undergoing outpatient AOD treatment, they may not generalize to the experiences of adolescents undergoing inpatient treatment, or general population samples of adolescents. Last, the analyses summarized here were based on self-report data from a single source with all related limitations, although the instruments used to collect these data demonstrate acceptable reliability and validity. Overall, although the current study has some limitations, it enhances considerably current knowledge about the heterogeneity of psychiatric symptoms in treatment samples of adolescents and the complex relations between psychopathology experienced by adolescents receiving AOD treatment services and their risk for exposure to STIs, including HIV.

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Table 1
Bivariate Correlations Among CIDI Symptom Counts, SRB Indexes, and Putative Proximal Risk Factors for SRB

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. ODD/CD symptoms	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2. Affective symptoms	.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3. Anxiety symptoms	.07	.43**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4. ADHD symptoms	.33**	.25**	.22**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5. AA/AD symptoms	.14*	.37**	.17**	.23**	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6. DA/DD symptoms	.02	.32	.14*	.30**	.44**	—	—	—	—	—	—	—	—	—	—	—	—	—
7. Alcohol-sex expectancies	.10	.16**	.03	.13*	.21**	.26**	—	—	—	—	—	—	—	—	—	—	—	—
8. Condom self-efficacy	-.12*	-.10	-.07	-.10	-.13*	-.13*	-.38**	—	—	—	—	—	—	—	—	—	—	—
9. ASAS risk refusal	.16**	.06	.04	.03	.09	-.08	.02	-.02	—	—	—	—	—	—	—	—	—	—
10. ASAS condom interaction	.13*	.11	.11	.03	.06	-.10	.11	-.15*	.47**	—	—	—	—	—	—	—	—	—
11. DB condom pros	-.05	-.09	-.09	-.14*	-.10	-.13*	-.25**	.37**	.04	-.04	—	—	—	—	—	—	—	—
12. DB condom cons	.06	-.02	.02	-.03	.04	.02	.06	-.20**	.32**	.11	.15*	—	—	—	—	—	—	—
13. Condom inhibition	.11	.08	-.01	.11	.07	-.05	.19**	-.42**	.21**	.20**	-.16**	.18**	—	—	—	—	—	—
14. Alcohol before sex	.15**	.17**	.08	.14*	.32**	.29**	.06	-.13*	.07	-.02	-.17**	.02	.01	—	—	—	—	—
15. Drugs before sex	.08	.24**	.10	.10	.22**	.42**	.02	-.07	-.02	-.11	-.11	.01	-.04	.37**	—	—	—	—
16. Composite SRB	.14*	.16**	.01	.12*	.24**	.37**	.16**	-.28**	-.03	-.07	-.23**	-.06	-.02	.62**	.51**	—	—	—
17. % unprotected sex	.05	.06	-.06	.12*	.07	.11	.20**	-.44**	-.09	.02	.17**	-.04	.19**	.08	.06	.37**	—	—
18. Age of sexual debut	.03	.14*	.12*	.19**	.06	.15*	.15**	-.07	-.02	.12*	-.03	-.11	-.02	-.03	-.07	.01	.09	—
19. No. of partners	.02	.01	-.04	-.05	.00	-.02	.02	.08	-.08	-.13*	-.06	-.05	-.17**	.17**	.16**	.42**	-.04	-.13*

Note. CIDI = Composite International Diagnostic Interview; SRB = sexual risk behavior; ODD = oppositional defiant disorder; CD = conduct disorder; ADHD = attention deficit hyperactivity disorder; AA = alcohol abuse; AD = alcohol dependence; DA = drug abuse; DD = drug dependence; ASAS = AIDS-Related Social Skills questionnaire; DB = decisional balance.

* $p < .05$.
** $p < .01$.

Table 2
Mean Nonstandardized CIDI Psychiatric Symptom Counts for the Five-Part Cluster Solution

CIDI symptoms	High CD/ODD ^a		High internalizing ^b		Moderate symptom ^c		High symptom ^d		Low symptom ^e		Statistic test	
	M	SD	M	SD	M	SD	M	SD	M	SD	F	
CD/ODD	11.98 ^a	3.44	11.00 ^{a,b}	3.73	10.56 ^b	3.45	10.95 ^{a,b}	3.83	7.85 ^d	2.39	12.76	***
Anxiety	6.98 ^a	2.75	20.78 ^b	5.09	6.13 ^c	2.01	13.24 ^d	4.23	6.41 ^{a,c}	2.72	153.23	***
Affective	3.14 ^a	3.27	6.11 ^b	4.75	2.10 ^c	2.97	11.10 ^d	4.33	0.65 ^e	1.35	46.28	***
AA/AD	0.78 ^a	1.25	1.78 ^b	1.72	2.60 ^c	2.17	6.05 ^d	2.06	0.13 ^e	0.34	67.69	***
DA/DD	4.25 ^a	3.23	5.56 ^b	3.47	6.11 ^b	2.70	8.19 ^c	2.77	0.72 ^d	1.03	36.67	***
ADHD	12.21 ^a	3.41	12.63 ^a	4.53	6.10 ^b	4.35	13.57 ^a	3.94	3.72 ^c	2.91	70.10	***

Note. Multivariate analysis of variance of nonstandardized CIDI psychiatric symptom frequency by cluster membership; Pillai's trace = 1.931, $F(24, 1160) = 45.126$, $p < .001$. Cluster means for CIDI symptoms frequency with different subscripts are significantly different by Tukey HSD tests with significance levels of .05. CIDI = Composite International Diagnostic Interview; CD = conduct disorder; ODD = oppositional defiant disorder; AA = alcohol abuse; AD = alcohol dependence; DA = drug abuse; DD = drug dependence; ADHD = attention deficit hyperactivity disorder.

^a $n=123$.

^b $n=27$.

^c $n=80$.

^d $n=21$.

^e $n=46$.

 $p < .001$.

Table 3
Prevalence of CIDI-Derived Psychiatric Diagnoses for the Five-Part Cluster Solution

CIDI diagnoses	High CD/ODD ^a n (%)	High internalizing ^b n (%)	Moderate symptom ^c n (%)	High symptom ^d n (%)	Low symptom ^e n (%)	Test statistic χ^2
Major depression	6 (4.9%)	2 (7.4%)	2 (2.5%)	2 (9.5%)	0 (0%)	5.07
Dysthymia	5 (4.1%)	4 (14.8%)	1 (1.3%)	9 (42.9%)	0 (0%)	57.62***
GAD	2 (1.6%)	13 (48.1%)	2 (2.5%)	8 (38.1%)	0 (0%)	94.50***
Specific phobia	1 (0.8%)	2 (7.4%)	0 (0%)	0 (0%)	0 (0%)	12.60*
Social phobia	1 (0.8%)	2 (7.4%)	0 (0%)	0 (0%)	0 (0%)	12.60*
Panic disorder	0 (0%)	4 (14.8%)	0 (0%)	3 (14.3%)	0 (0%)	37.20***
Alcohol abuse	34 (33.3%)	12 (50%)	49 (62.8%)	19 (90.5%)	1 (2.7%)	60.32***
Alcohol dependence	4 (3.3%)	3 (11.1%)	18 (22.5%)	15 (71.4%)	0 (0%)	84.44***
Drug abuse	90 (73.2%)	23 (85.2%)	74 (92.5%)	20 (95.2%)	15 (32.6%)	63.02***
Drug dependence	49 (39.8%)	15 (55.6%)	53 (66.3%)	18 (85.7%)	0 (0%)	68.69***
ADHD inattentive	72 (58.5%)	15 (55.6%)	14 (17.5%)	15 (71.4%)	2 (4.3%)	70.36***
ADHD hyperactive	52 (42.3%)	17 (63.0%)	10 (12.5%)	12 (57.1%)	0 (0%)	60.76***
Conduct disorder	63 (51.2%)	18 (66.7%)	40 (50.0%)	18 (90.0%)	15 (32.6%)	20.99***
ODD	4 (3.3%)	0 (0%)	0 (0%)	0 (0%)	1 (2.2%)	4.06

Note. Numbers in Table 3 represent frequencies of individuals who met the DSM-IV diagnoses listed. CIDI = Composite International Diagnostic Interview; CD = conduct disorder; ODD = oppositional defiant disorder; GAD = generalized anxiety disorder; ADHD = attention deficit hyperactivity disorder.

^a $n = 123$.

^b $n = 27$.

^c $n = 80$.

^d $n = 21$.

^e $n = 46$.

* $p < .05$.

*** $p < .001$.

Table 4
Mean Scores for SRB Proximal Risk Factors and SRB Outcomes for the Five-Part Cluster Solution

Risk Factors	High CD/ODD ^a		High internalizing ^b		Moderate symptom ^c		High symptom ^d		Low symptoms ^e		Test statistic	
	M	SD	M	SD	M	SD	M	SD	M	SD	F	p
Alcohol-sex expectancies	2.69 ^a	1.41	2.57 ^{a,b}	1.63	2.91 ^a	1.52	3.29 ^a	1.79	2.10 ^b	1.43	3.07	*
Condom efficacy	3.22 ^a	1.30	2.93 ^a	1.42	3.05 ^a	1.31	2.87 ^a	1.30	3.82 ^b	1.25	3.45	**
ASAS risk refusal scale	1.70	0.77	1.81	0.87	1.58	0.61	1.81	0.66	1.70	0.87	0.77	
ASAS condom interactions scale	1.49	0.69	1.63	0.66	1.37	0.67	1.68	0.73	1.42	0.80	1.29	
Decisional balance pros	4.32 ^{a,c}	0.64	3.96 ^b	0.98	4.16 ^{a,b}	0.82	4.15 ^{a,b,c}	0.76	4.53 ^c	0.58	3.34	*
Decisional balance cons	2.23	0.98	2.41	1.02	2.18	1.01	2.36	0.88	2.46	1.18	0.76	
Condom inhibition	2.20	1.73	2.12	2.00	1.76	1.23	2.22	1.85	1.75	1.44	1.33	
SRB indexes												
Drinks during sex	2.07 ^a	1.08	2.12 ^a	0.95	2.20 ^a	1.10	2.53 ^a	1.18	1.45 ^b	0.70	5.05	***
Drugs during sex	2.56 ^a	1.34	2.85 ^a	1.54	2.74 ^a	1.35	3.24 ^a	1.35	1.86 ^b	1.13	4.74	***
Sexual debut	13.51 ^a	1.60	13.69 ^a	2.15	13.34 ^a	1.81	14.06 ^a	0.79	12.32 ^b	2.60	4.41	**
No. partners	3.57	4.17	4.23	7.71	3.29	3.82	2.65	2.64	5.05	10.72	0.87	
Unprotected sex	0.35 ^a	0.42	0.21 ^{a,b}	0.35	0.33 ^a	0.40	0.37 ^a	0.40	0.13 ^b	0.26	3.39	**
Composite SRB	2.21 ^a	1.14	2.19 ^a	1.23	2.38 ^a	1.22	2.53 ^a	1.18	1.45 ^b	1.11	5.16	***

Note. For multivariate analysis of variance (MANOVA) scores for proximal risk factors by cluster membership, Pillai's trace = .142, $F(28, 1140) = 1.503$, $p < .001$. For MANOVA scores of SRB indexes by cluster membership, Pillai's trace = .224, $F(24, 1108) = 2.739$, $p < .001$. Cluster means for scores with different subscripts are significantly different, by Tukey HSD tests with significance levels of .05. SRB = sexual risk behavior; CD = conduct disorder; ODD = oppositional defiant disorder; ASAS = AIDS-Related Social Skills questionnaire.

^a $n=123$.

^b $n=27$.

^c $n=80$.

^d $n=21$.

^e $n=46$.

* $p < .05$.

** $p < .01$.

.100 > d

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