



Published in final edited form as:

Am J Drug Alcohol Abuse. 2005 ; 31(1): 179–201.

Dual and Multiple Diagnosis Among Substance Using Runaway Youth[#]

Natasha Slesnick and Jillian Prestopnik

Center on Alcoholism, Substance Abuse and Addictions (CASAA), The University of New Mexico, Albuquerque, New Mexico, USA

Abstract

Although research on runaway and homeless youth is increasing, relatively little is known about the diagnostic profile of runaway adolescents. The current study examined patterns of psychiatric dual and multiple diagnosis among a sample ($N = 226$) of treatment-engaged substance-abusing youth (ages 13 to 17) who were residing at a runaway shelter. As part of a larger treatment outcome study, the youths' psychiatric status was assessed using the DSM-IV based computerized diagnostic interview schedule for children [CDISC; (1)]. The majority of the youth in our sample met criteria for dual or multiple diagnosis (60%) with many having more than one substance-use diagnosis (56%). The severity of mental-health and substance-use problems in this sample of substance-abusing runaways suggests the need for continued development of comprehensive services. The range and intensity of diagnoses seen indicates a need for greater focus on treatment development and strategies to address their multiple areas of risk.

Keywords

Runaway; substance-use; multiple diagnoses; psychiatric; adolescent

INTRODUCTION

Despite controversy in the field regarding the usefulness of diagnoses and the potential for negative repercussions associated with labeling or validity of diagnoses (2–4), diagnostic information allows communication and provides information that can be a useful starting point for intervention efforts (5,6). Used appropriately, diagnostic information has the potential to enhance treatment outcome through guiding intervention efforts (7).

The literature on adolescent dual diagnosis is much smaller than is that of the adult literature (8) even though many studies indicate that substance use disorders often develop in conjunction with other psychiatric disorders (9). Furthermore, longitudinal studies found that childhood conduct problems/antisocial behaviors foster subsequent problem substance use or antisocial personality disorder in adolescence and adulthood (10,11). Stice et al. (10) note that much research on antisocial behavior and substance use among adolescents is based upon community or school samples, with fewer researchers having examined clinical samples of youth treated for substance abuse.

Indeed, many studies found that conduct problems are common among adolescents treated for substance abuse problems, with the incidence ranging from 40% to 90% [e.g., (12,13)]. A mong

[#]This work has been supported by NIDA grant (R29 DA 11590) and NIAAA and CSAT grant (AA12173).

Address correspondence to Natasha Slesnick, Department of Human Development and Family Science, College of Human Ecology, Ohio State University, 139 Campbell Hall, 1787 Neil Ave., Columbus, OH 43210; E-mail: slesnick.5@osu.edu.

specific subtypes of psychiatric dual diagnosis, depressive diagnoses are studied more widely than is any other type (8) with studies showing dual diagnosis rates of depression ranging from 20% to 30% [e.g., (14–17)]. Several studies found that the presence of an anxiety disorder was not significantly higher in youth with a substance-use disorder (8) and that the range of dual diagnosis with anxiety disorder is from 7% to 18% (18–20).

Runaways, as a subgroup of adolescents, are relatively understudied and underserved. Researchers investigated the characteristics and correlates of adolescent runaways and found that this population is especially at risk for engaging in delinquent behavior (21–23). In the runaway literature, Booth and Zhang (24) assessed the prevalence of conduct disorder (CD) among runaway and homeless adolescents and investigated the association between CD and HIV-risk behaviors among 219 runaway and homeless adolescents recruited from a drop-in center. One-half of the males and 60% of the females were diagnosed with CD. Conduct disorder was the strongest predictor of lifetime heroin and cocaine use and survival sex practices, number of sex partners, and number of drugs used in the prior three months. These authors note the importance of considering the influence of psychiatric diagnosis on high-risk behaviors.

In addition to the high rate of conduct disorder and high-risk behaviors among runaway youth, substance use, psychotic symptoms, and depression are also high in this population. Substance use among runaway and homeless adolescents is two to three times higher than is that of school youths (25,26). Kooperman, Rosario, and Rotheram-Borus (27) compared a sample of runaway adolescents to adolescents in general and found that runaways are three times more likely to use marijuana, seven times more likely to use crack/cocaine, five times more likely to use hallucinogens, and four times more likely to use heroin. Mundy and colleagues (28) found that 29% of their sample of homeless youth reported experiencing four or more of the psychotic symptoms on the Diagnostic Interview Schedule psychotic-symptom index. It is not surprising that studies have found rates of clinical depression ranging from 29% to 83.6% (29–31).

Although several studies examined conduct disorder, depressive symptoms or substance-related diagnoses among runaway and homeless youth (24,29,30,32,33) fewer studies examined the range of comorbid diagnoses that these youth may present with utilizing Diagnostic and Statistical Manual-IV (DSM IV) criteria. However, Unger et al. (30) assessed symptoms of Attention Deficit Hyperactivity Disorder (ADHD) utilizing the Adolescent Diagnostic Interview (34), depression utilizing the CES-D (35), and substance use with questions from the Substance Abuse Module (36). Unger et al. (30) evaluated youth, age 12 to 23 years, who were living in shelters and on the street. They found an extremely high prevalence of these mental health problems compared with corresponding rates among housed youth.

Schweitzer and Hier (37) examined the prevalence of psychological maladjustment in homeless adolescents ($N = 54$) in Australia, as compared to a housed control group ($N = 54$) using the Youth Self-Report (38). They found that 74% of the homeless group and 22.4% of the control group scored within the clinical range on one or more clinical subscales. Similarly, Craig and Hodson (39) examined psychiatric disorder prevalence among a sample of London homeless youth as compared to housed youth utilizing the Composite International Diagnostic Interview [CIDI; (40)]. Their findings were similar to those found in the United States. The homeless, when compared to nonhomeless, youth, suffered from chronic mental health disorders. The rates of mental illness were three times those seen in the nonhomeless sample and included primarily depression and anxiety disorders. They further noted that childhood psychiatric disorder may contribute to adult homelessness through the negative impact on the youth's ability to earn income and effectively engage in housing programs.

Unlike these prior findings, McCaskill, Toro and Wolfe (41) found that although shelter-residing youth, compared to a matched sample of housed adolescents, showed more disruptive behavior disorders and alcohol abuse or dependence, no differences in drug abuse, affective disorders, or psychotic disorders were found.

No study was found that examined multiple diagnostic patterns among runaway youth utilizing DSM-IV criteria. Thus, using the Computerized Diagnostic Interview Schedule for Children (CDISC), which provides diagnoses based upon DSM-IV criteria (1), the goals of this study were to 1) examine diagnostic patterns associated with dual, concurrent diagnoses (both conditions are diagnosed as being present in the individual at the same time vs. sequential or lifetime comorbidity), 2) examine diagnostic patterns associated with multiple diagnoses (two or more diagnoses are present in addition to substance use), 3) examine whether different drugs show distinct comorbid patterns, and 4) examine family and individual correlates of multiple diagnoses.

Our final aim is to 5) examine gender and ethnicity differences in patterns of dual and multiple diagnoses among this sample of shelter-residing, runaway youth. This is important given that Winters, Latimer and Stinchfield (42) noted that research on gender differences in psychiatric dual and multiple diagnosis among drug-abusing youth is too small to reach definitive conclusions. The literature on runaway youth is even sparser in examining gender and ethnicity differences associated with dual and multiple diagnosis. Overall, the findings from this study might help increase our understanding of the range of diagnoses that this group of substance-abusing youth have that can be useful for treatment development efforts.

METHOD

Participants

Researchers recruited 226 runaway youth from two adolescent runaway shelters in a southwestern city. A total of 123 (54%) females and 103 (46%) males were included in this study. The ethnic distribution was 15 (7%) Native Americans, 14 (6%) African American, 98 (43%) Hispanic, 76 (34%) Anglo, and 23 (10%) Other. Adolescents were an average of 15 years old ($SD = 1.39$), with a range from 12 to 17 years old. Adolescents reported having run away from home an average of 4.72 times ($SD = 10.02$). Of the 226 adolescents, 142 (62%) reported ever being arrested. Of those ever arrested, adolescents reported being arrested an average of 2.67 times ($SD = 5.38$).

The current study is part of two larger studies examining treatment outcomes with substance-abusing runaway adolescents (grants R29DA11590 and R01AA12173). In order to participate in the study, youth had to satisfy eligibility requirements, which included meeting DSM-IV diagnostic criteria for a substance-use disorder, being between the ages of 12 to 17, reside within a 60-mile radius of the research site, and have a parent or surrogated parent willing to participate in family therapy. Of eligible youth referred to the study 95% agreed to participate.

Procedure

A project research assistant approached each youth identified as potentially eligible for the program by shelter staff. If the youth met preliminary eligibility criteria, the research assistant reviewed the nature and conditions of the study and the elements of informed consent. The youth was then asked to sign the consent statement. However, prior to the assessment being administered, the youth's primary caretaker was contacted and their consent was obtained for participation in the program. In most cases, the assessment was completed within 24 hours after initial contact. Once both consents were obtained, the research assistant administered the Diagnostic Interview Schedule for Children [DISC; (1)] sections on alcohol, marijuana, and

other substances to the youth in an effort to ascertain whether or not the youth met DSM-IV criteria for a substance-use disorder. If the youth did not meet criteria for a drug- or alcohol-use disorder, they continued with treatment as usual through the shelter. Those youth receiving a drug- or alcohol-use diagnosis continued with the assessment. They were told that the assessment would take up to three hours and that they would receive \$25 at the completion of the assessment.

Materials

Three domains of interest were assessed: family functioning, substance use, and related problem behaviors. The assessment included both clinician-assisted and self-report questionnaires. Those youth having difficulty completing the self-report questionnaires were offered assistance from the interviewer and youths were given the option of completing the assessment in one sitting or in two shorter sessions on separate days.

Diagnostic Status—Shaffer's Computerized Diagnostic Interview Schedule for Children [CDISC, (1)] is a computerized instrument consisting of 263 items measuring the criteria for DSM-IV diagnoses. The CDISC was developed specifically to diagnose children and adolescents and is prominent in the field (43), it was administered to youth in the study by the research assistant. The CDISC includes sections on Conduct Disorder, Oppositional Defiant Disorder, Mood, Eating, and Anxiety disorders. It has demonstrated excellent interrater reliability of 97% with clinicians agreeing with the diagnosis of CDISC (44).

Demographic Measures—A demographic questionnaire, designed to characterize and compare participants, was administered. Measures included age, gender, self-identified ethnicity, information about parents and siblings, economic information, education level, grade point average, suicidality, family abuse, and arrest history.

Family Measures—The Conflict Tactic Scale [CTS; (45)] was implemented to measure the occurrence of several methods of conflict resolution used by the youth and primary caretaker. Three subscales were used (reasoning, verbal aggression, and physical violence), with each subscale separately scored to understand the methods used in conflict resolution. The measure has shown good internal consistency with a Cronbach's alpha of .83 (46) in a clinical sample. The CTS is a widely used measure of conflict resolution tactics (44).

The Parental Bonding Instrument [PBI, (47)] consists of 25 items designed to measure the youth's perceived attitudes of parental bonding and overprotection during the period of time in which the youth lived in the home. Reliability and validity were established in both clinical and nonclinical samples (48,49). A number of studies document the suitability of using the PBI with adolescent samples (50,51).

The Family Environment Scale [FES; (52)], is a commonly used and well-standardized family assessment instrument. It is comprised of 90 true-false items and consists of 10 subscales that measure the following social-environmental characteristics of families: Cohesion, Expressivity, Conflict, Independence, Achievement-Oriented, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control. Internal consistencies range from .61 to .78 and test-retest reliabilities from .73 to .86. Conflict and Cohesion subscales were used to assess family disturbance as these two areas of functioning are shown to predict negative communication exchanges in delinquent families (53).

Measures of Substance Use—The Form 90, developed for NIAAA-funded Project Match (54), was the primary measure of quantity and frequency of drug and alcohol use. This measure

uses a combination of the timeline follow-back method (55) and grid averaging (56). This tool has shown excellent test-retest reliability for indices of drug use in major categories (57,58) including with runaway substance abusing adolescents (59) with kappas for different drug classes ranging from .74 to .95. To address problem consequences associated with drug use, the POSIT (92) was utilized. Support for the psychometric properties of the POSIT, including convergent and discriminant validity, has been reported by McLaney, Delboca and Babor (93).

Related Problem Behaviors

The NYSDS is a structured interview used as a measure of delinquent behavior. It includes 5 subscales: General theft, Crimes against persons, Index offenses, Drug sales, and Total delinquency. The NYSDS is a structured interview that has displayed adequate test-retest and criterion validity (60). Test-retest reliabilities for periods between two weeks and six months range from .75 to .98, internal consistency alphas range between .65 and .92, and criterion correlations between self-report and police or parent data approach .40 (61).

The Youth Self-Report (YSR) of the parent-reported Child Behavior Checklist [CBCL; (62)] provides a standardized format to quickly elicit reports of children's behavior across a wide range of problem areas. The 120-item scale includes an assessment of behaviors in children associated with withdrawal, somatic complaints, anxiety/depression, social problems, thought problems, attention problems, delinquency, and aggression. The YSR provides factor scores for internalizing and externalizing as well as total behavior problems. The measure is highly reliable and effectively discriminates between children referred to clinics for problem behavior and nonclinic children.

The Health Risk Questionnaire (63,64) a modified version of the 1989 edition of the CDC Health Risk Survey [HRS; (63)] and of the Homeless Youth Questionnaire (64) were utilized in this project. Johnson et al. (64), examined seven specific AIDS risk factors, which were included in the present study as follows: 1) IV drug use; 2) multiple sexual partners; 3) high-risk sexual partners (including prostitutes, IV drug users, and persons who are HIV positive); 4) irregular condom use, defined as whether or not the respondent or partner usually uses a condom; 5) anal sex; 6) prostitution; and 7) ever having had an STD. These risk factors can be aggregated into an overall AIDS risk index, which is a simple count of the number of risk factors reported by the youth (range 0–7; Cronbach's alpha = 0.61).

RESULTS

Substance Use Disorders

Of the 226 adolescents included in this study, 90 (40%) had only substance-use diagnoses. Seventy-seven (34%) had one mental health diagnosis in addition to a substance-use diagnosis (dual diagnosis). Finally, 59 (26%) had two or more mental health diagnoses in addition to a substance-use diagnosis (multiple diagnosis). A "diagnostic status" variable was created to delineate substance-use alone diagnosis (coded as 0), dual diagnoses (coded as 1), and multiple diagnoses (coded as 2).

Of the adolescents with substance-use disorders, 145 (64%) were diagnosed with an alcohol-use disorder (alcohol abuse or alcohol dependence), 182 (81%) were diagnosed with marijuana-use disorder (abuse or dependence), and 57 (25%) were diagnosed with other substance-use disorder (abuse or dependence). Nicotine dependence was not included in the substance-use disorders and also was not considered for the inclusions for dual or multiple diagnoses in the rest of the paper. However, 61 (27%) adolescents did report nicotine dependence. Further, of these three substance-use diagnoses, 100 (44%) adolescents were diagnosed with only one

substance-use disorder, 94 (42%) were diagnosed with two substance-use disorders, and 32 (14%) adolescents had all three substance-use disorders (see Tables 1, 2 and 3).

For lifetime reported use for specific drugs, 223 (99%) reported ever using alcohol, 122 (54%) ever used cocaine, 29 (13%) ever used sedatives, 146 (64%) ever used hallucinogens, 82 (36%) ever used inhalants, 224 (99%) ever used marijuana, 48 (21%) ever used opiates, 6 (3%) ever used steroids, 218 (97%) ever used tobacco, 37 (16%) ever used tranquilizers, and 50 (22%) ever used other drugs.

We now will investigate each of our previously stated goals in turn, beginning with examining the mental health diagnoses as they differ for dually and multiply diagnosed adolescents.

Examine Diagnostic Patterns Associated with Dual, Concurrent Diagnosis

Dually Diagnosed: We examined the mental health diagnoses of the dually diagnosed adolescents. For the 77 adolescents with a mental health diagnosis in addition to a substance use diagnosis, the most common diagnosis was conduct disorder ($N = 35$). See Table 4 for the number of dually diagnosed adolescents with each mental health diagnosis.

Examine Diagnostic Patterns Associated with Multiple Diagnosis

Multiply Diagnosed: For the 59 multiply diagnosed adolescents, the most common diagnosis was major depression ($N = 28$) and an additional four reported dysthymia. See Table 4 for the number of multiply diagnosed adolescents with each mental health diagnosis.

Throughout the remainder of the results, we will be investigating substance use and mental health. In order to compare the relation of substance use and mental health, a number of different measures of each will be used to help understand the data in different ways. To measure substance use, the number of substance-use diagnoses (range from 1 to 3), and measures of amount of use (% days of the past 90 days) of different drugs will be used. To measure mental health, the measure of diagnostic status (described previously) will be used, along with the incidence of specific diagnoses (e.g., major depression) will be used.

Examine Whether Different Drugs Show Distinct Comorbid Patterns

Substance-Use Diagnoses and Mental Health Diagnoses: Next, we investigate the relation between substance-use diagnoses and mental health diagnoses. Differences in specific diagnoses based on the *number* of substance-use diagnoses (1, 2, or 3) were examined using Chi-Square tests. Only the diagnosis of conduct disorder differed by the number of substance-use diagnoses ($\chi^2 = 8.10, p = .02$), with 15 (15%) adolescents with one substance-use diagnosis, 25 (27%) adolescents with two substance-use diagnoses, and 12 (38%) with three substance-use diagnoses, reporting conduct disorder. No other diagnoses differed by number of substance-use diagnoses (p 's $> .10$).

We were also interested in the patterns of mental health diagnoses that specific substance-use diagnoses showed. However, since a majority of adolescents (56%) had more than one substance-use diagnosis, the patterns were not discernable due to the overlap of adolescents between groups.

Examinations of differences in frequency of use (percent of days of use in the past 90) of the major drug classes were examined for differences for the major diagnoses. Although 11 major drug classes are examined in the Form 90, only cocaine (CO), marijuana (MA), and alcohol (AL) were examined because they were the most frequently used by these adolescents. [Percent days used out of the past 90 days: $M (SD) = 15\% (19)$ for AL, $39\% (35)$ for MA, $5\% (15)$ for

CO.] All other drugs were used an average of less than 3% of days and were, therefore, not considered to be used often enough to warrant analyses.

Dual/Multiply Diagnosed: Using the “diagnostic status” variable described previously, the relation of diagnostic status to differing patterns of drug use was investigated. To determine if the pattern of use identified drugs differed between those with dual and multiple diagnosis, a profile analysis was performed, using repeated measures ANOVA, with diagnostic status variable as a between-subjects variable and the percent days of drug use as the dependent variables (AL, MA, and CO percent days use). An interaction was the key effect sought in this analysis, because this would show that differing numbers of mental health diagnoses were related to different amounts of use of AL, MA, and CO. No significant interaction was found ($p > .10$). However, one reason for no interaction could be that all diagnoses were grouped together. A better way to conduct the analyses may be to separate the mental health diagnoses into different classes. This same analysis was used to determine if the adolescents with a diagnosis in particular classes of diagnosis were related to different patterns of drug use.

To conduct these analyses, new variables grouping mental health diagnoses into classes were created from the individual diagnosis counts. Three main variables were created. Conduct disorder and oppositional defiant disorder were combined to create a CD/ODD variable. Eighty-two (36%) adolescents had a diagnosis of CD or ODD. Depression, dysthymia, mania, and hypomania were combined to create an affective disorders variable. Forty-six (20%) adolescents had one or more affective disorder diagnoses. Generalized anxiety disorder, obsessive compulsive disorder, panic disorder, post-traumatic stress disorder (PTSD), agoraphobia, general phobia, and specific phobia were combined to create an anxiety disorders variable. Seventy-three (32%) adolescents had one or more anxiety disorder diagnoses.

CD/ODD: To test whether diagnoses of conduct disorder and oppositional defiant disorder showed differences in use of particular drugs, ANOVAs were utilized. Since conduct disorder and oppositional defiant disorder are mutually exclusive according to DSM-IV criteria, all adolescents could only have a diagnosis for one of the disorders. Adolescents with a CD/ODD diagnosis showed differential patterns of substance use as compared to adolescents without a CD/ODD diagnosis [$F(2, 223) = 3.51, p < .05$; see Figure 1]. Those with CD/ODD used marijuana more frequently ($M = 47\%$ days, $SD = 34$) than did those without CD/ODD ($M = 34\%$ days, $SD = 34$), $t(224) = -2.72, p < .01$.

Anxiety: Since the number of anxiety disorders could range from zero to six, the anxiety disorders variable was recoded so that the incidence of any anxiety disorder (one or more) was compared to no anxiety disorder. Incidence of anxiety disorder did not show differential patterns of substance use ($p > .10$).

Affective: Affective disorders were recoded in the same manner as anxiety disorders so that incidence of any affective disorder was compared to no affective disorder. Affective disorders also did not show differential patterns of drug use ($p > .10$).

Examine Family and Individual Correlates of Multiple Diagnosis—Next, our interest in mental health diagnoses was in the possible relation that mental health diagnoses would have to the family environment and individual characteristics. Our interest was in how factors related to the family environment (conflict tactics total score for parent and for youth, bonding care score, conflict, and cohesion) and individual factors (HIV risk score, drug or alcohol problem consequences (POSIT), and Delinquency total score) were related to diagnostic status (none, one, or multiple co-occurring mental health diagnoses, scored 0, 1, or 2) and to the incidence of major classes of mental health diagnoses. Hierarchical regression analyses were performed to determine the relative impact of the family environment and individual factors on diagnostic

status and the occurrence of the major classes of diagnoses (affective disorders, anxiety disorders, and CD/ODD). For these analyses, the classes of diagnoses were not dichotomized since regression analyses are well equipped to handle continuous variables and would lend further sensitivity to the analyses. Four stepwise regression analyses, predicting diagnostic status and each of major classes of diagnoses in turn, were conducted by first entering the individual factors and then entering the family environment factors second. By doing so, not only can we determine the overall effect of the family environment and the individual factors, but we can determine the relative impact of each set of factors, separate from the other. Due to missing data in some of the individual and family variables, the number of valid cases for these analyses is 219.

Predicting Diagnostic Status: Diagnostic status was significantly predicted by the individual factors [$sr^2 = .04$, $F(3, 215) = 2.68$, $p < .05$]. Higher scores on the individual problem measures were related to higher levels of diagnostic status (multiple diagnoses). Family environment factors did not add a significant amount of variance above that of the individual factors ($sr^2 = .02$, $p > .10$). Overall R for the model was .23 [$R^2 = .05$, $F(8, 210) = 1.45$, $p > .10$].

Predicting Affective Disorders: Affective disorders were significantly predicted by the individual factors [$sr^2 = .11$, $F(3, 215) = 8.37$, $p < .001$]. Family environment factors added a significant amount of variance above that of the individual factors [$sr^2 = .07$, $F(5, 210) = 3.31$, $p > .01$]. Overall R for the model was .41 [$R^2 = .17$, $F(8, 210) = 5.38$, $p < .001$].

Predicting Anxiety Disorders—Anxiety disorders were predicted by the individual factors [$sr^2 = .04$, $F(3, 215) = 2.64$, $p = .05$]. Family environment factors did not add a significant amount of variance above that of the individual factors ($sr^2 = .04$, $p > .10$). Overall R for the model was .27 [$R^2 = .07$, $F(8, 210) = 2.03$, $p < .05$].

Predicting CD/ODD: The diagnoses of CD and ODD were not predicted by family and individual variables (all p 's $> .10$). Overall R for the model was .21 ($R^2 = .04$).

Examine Gender and Ethnicity Differences in Patterns of Dual and Multiple Diagnosis—Finally, investigations into ethnicity and gender differences were made. Chi-Square analyses were conducted to determine if gender and ethnicity showed differences in the incidence of mental health and substance use diagnoses.

Gender Differences: Differences between males and females were investigated. No differences were found for the number of substance-use diagnoses. However, females were more likely to have multiple diagnosis than were males (see Table 5; $\chi^2 = 7.77$, $p < .05$). Gender differences were found for all three diagnostic groupings, with males reporting greater incidence of CD/ODD ($\chi^2 = 4.49$, $p < .05$), females reporting a larger number of anxiety disorders ($\chi^2 = 10.36$, $p < .01$), and more affective disorders ($\chi^2 = 8.84$, $p < .01$). See Table 5 for number and percentage of males and females with each class of disorder.

Ethnicity Differences: Ethnicity differences in mental health and substance-use diagnoses were only examined for Anglo youth and Hispanic youth because the other ethnicities were not as prominent. Therefore, 76 Anglo youth and 98 Hispanic youth were compared on dual and multiple diagnosis; number of substance-use diagnoses; and on the incidence of affective, anxiety, and CD/ODD diagnoses. No differences between Anglo and Hispanic youth were found for any of these measures (all p 's $> .10$).

DISCUSSION

This paper examined patterns of dual and multiple diagnosis among a sample of shelter-residing, treatment-seeking runaway adolescents. To our knowledge, this is the first systematic study using a DSM IV-based interview schedule to examine the full range of psychiatric diagnoses within this population.

Patterns of Diagnostic Status

The majority (60%) of our sample had dual (34%) or multiple diagnoses (26%). Among multiply diagnosed youth, major depression was the most common diagnosis, followed by oppositional defiant disorder, conduct disorder, and obsessive compulsive disorder. For those youth dually diagnosed, conduct disorder was the most common mental health diagnosis followed by oppositional defiant disorder and major depression. Regardless of dual or multiple comorbidity, among diagnostic categories, conduct/oppositional defiant disorders were the most common (36%), followed by anxiety disorders (32%), and then affective disorders (20%). Among the general population of substance-abusing youth seeking treatment our incidence of conduct and affective disorder is similar to the findings of others (8). In addition, conduct disorder was related to multiple substance-use diagnoses and to greater marijuana use. However, our sample of runaway youth show a much higher incidence of anxiety disorder compared to that of nonrunaway substance abusers (with ranges of 7% to 18%), and we found no other reports among runaway youth on anxiety diagnoses. This is an interesting finding as anxiety disorders respond well to brief psychosocial interventions and generally show good prognosis (65–69).

Several researchers have investigated the relationship between affect and substance use finding that reduction of negative affect is linked to drug and alcohol use with heavier users reporting negative affect [e.g., (70–72)]. Some have interpreted substance use as an escape-avoidance form of coping with emotions (73,74). Given the evidence suggesting that anxiety may be successfully treated in adolescents and its potential role in substance use, substance-use treatment providers might consider evaluation and intervention of anxiety disorder in these youth. Further research can determine if such a focus might reduce substance-use relapse.

Among substance-use diagnoses, 56% of our youth met criteria for more than one substance-use disorder, including 14% who met criteria for three substance-use diagnoses. Our sample of shelter-residing runaway youth has severe substance-abuse problems. Other researchers have noted high levels of substance use among runaways, and our data show that in addition to high levels of use, these youth are meeting symptom criteria at an early age of onset. This is disturbing for several reasons. First, research has shown that early onset substance use problems can predict continuing substance abuse problems in adulthood (75–78). Hawkins, Catalano, and Miller (79) in a review of risk and protective factors for alcohol and drug problems in adolescence found that early onset of substance-use problems is associated with other problem behaviors including conduct problems, alienation and rebelliousness, and school failure.

Second, although these adolescents have sought assistance at the shelter, many do not seek treatment for substance use or mental health problems. Most shelters do not provide intervention beyond crisis intervention. Only 9% of homeless and runaway youth surveyed in one study had ever accessed mental health services (80) and only 10%–15% had ever received treatment for alcohol or drug problems (80,81). The high levels of multiple substance-use diagnoses in combination with dual and multiple comorbidity, family chaos, and individual problem behaviors creates a large set of risk factors that challenge current treatment efforts. This is a breakdown in our treatment services as shelters are not typically funded to provide comprehensive substance abuse and mental health assessment and intervention. Even for those

youth who access treatment for substance-abuse problems, Winters et al. (42) note that many drug treatment programs do not address psychiatric comorbidity issues directly. The unavailability of comprehensive services can interfere with treatment outcome as Latimer et al. (82) suggest that untreated comorbid psychiatric disorder may contribute to posttreatment relapse rates.

Family and Individual Correlates of Multiple and Dual Diagnosis

Individual factors (high-risk behaviors, drug-use consequences, and delinquency score) showed greater influence on both diagnostic status (dual and multiple diagnosis), and on presence of affective and anxiety disorders. Kaliski and coworkers (83) noted that the runaway adolescent's focus on present survival outweighed any major concerns for the future. In addition, chronic depression in runaway youth was viewed as being manifested as passively suicidal behaviors (83) as the depression obstructed more self-protective behaviors from being learned and practiced. These authors reported that seriously depressed runaways also believe, "if they get AIDS they would die and that would put an end to their worry and struggle" (83). The relationship between diagnostic status, affective and anxiety disorders, HIV risk behaviors, problem consequences, and illegal behaviors is not surprising given that multiply disordered youth might have a "nothing left to lose" philosophy.

Family environment factors (conflict, cohesion, bonding and conflict resolution skills) also predicted affective disorders above the contribution of individual variables, suggesting that family conflict and connection is especially salient for depressed youth as noted by many other researchers (84–87). Interestingly, conduct and oppositional defiant disorder were not predicted by our measures of family or individual variables, possibly this is due to a ceiling effect of uniformly high scores amongst this sample of youth.

Gender and Ethnicity

Males and females did not differ on number of substance-use diagnoses, although females were more likely to have multiple diagnoses than were males. Among mental health diagnoses, more males than females were diagnosed with conduct/oppositional defiant disorder (44% vs. 30%, respectively) and more females were diagnosed with anxiety (42% vs. 21%) and affective disorders (28% vs. 12%). Although one study found no differences in rates of comorbid diagnoses by gender in a school-based sample (9) our findings are consonant with other researchers whose findings were similar to ours (12,82,88).

No differences between Hispanic and Anglo youth on any of the dependent measures were found. Knight, Virdin, and Roosa (89) found rates of mental health problems to be similar among the general population of Hispanic and Anglo adolescents. Findings for substance use among runaway adolescents are mixed. Two studies showed no differences in diagnostic status of substance-use disorder or drug-use intention between Hispanic and Anglo runaways (90, 91). Contrary to our findings of no differences, two other studies found differences between Hispanic and Anglo runaway youth in which Hispanic runaways used drugs more frequently (27) and Anglo runaways were more likely to be diagnosed with an alcohol or other drug abuse disorder (30).

Limitations and Future Directions

Although one strength of this study was the utilization of DSM criteria and a structured interview to assess a range of mental health and substance-use disorders, several limitations of this research need to be considered. First, the findings are cross-sectional and causation cannot be attributed. This population is more severe than the population of housed substance-abusing youth and so the findings may not generalize to nonrunaway substance-abusing youth. In addition, our sample of runaway youth is based upon a sample of convenience and may not

represent runaway youth in other parts of the country that have different ethnic and racial compositions, and perhaps different environmental/social influences.

This study is a step towards increasing our understanding of the unique range and intensity of problems that runaway youth face beyond those of other substance-abusing youth, however, future research efforts need to focus on intervention strategies. To date, we have found no published intervention strategies to address the range of problems these youth face. Given the problem severity of this subgroup of substance-abusing youth, treatment efforts might best be directed towards multisystemic interventions that address individual, interpersonal and social factors that likely all interact in a reciprocal and bidirectional way.

References

1. Shaffer, D. The Diagnostic Interview Schedule for Children-2.3 Version. New York: Columbia University; 1992.
2. Baum SM, Olenchak FR. The alphabet children: GT, ADHD, and more. *Exceptionality* 2002;10(2): 77-91.
3. Nathan PE. Diagnostic and treatment services for children: introduction to the section. *Am Psychol* 1979;34:967-968. [PubMed: 517844]
4. Turner-Crowson J, Wallcraft J. The recovery vision for mental health services and research: a British perspective. *Psychiatr Rehabil J* 2002;25:245-254. [PubMed: 1185997]
5. Basco, MR. Is there a place for research diagnostic methods in clinic settings?. In: First, MB., editor. *Standardized Evaluation in Clinical Practice*. 22. Washington, DC: American Psychiatric Publishing, Inc.; 2003. p. 1-28.
6. Follette, WC.; Naugle, AE.; Linnerooth, PJN. Functional alternatives to traditional assessment and diagnosis. In: Dougher, MJ., editor. *Clinical Behavior Analysis*. Reno, NV: Context Press; 2000. p. 99-125.
7. Kratochwill TR, McGivern JE. Clinical diagnosis, behavior assessment, and functional analysis: examining the connection between assessment and intervention. *School Psych Rev* 1996;25:342-356.
8. Armstrong TD, Costello EJ. Community studies on adolescent substance use, abuse, or dependence and psychiatric comorbidity. *J Consult Clin Psychol* 2002;70(6):1224-1239. [PubMed: 12472299]
9. Rohde P, Lewinsohn PM, Seeley JR. Psychiatric comorbidity with problematic alcohol use in high school students. *J Am Acad Child Adolesc Psych* 1996;35(1):101-109.
10. Stice E, Myers MG, Brown SA. A longitudinal grouping analysis of adolescent substance use escalation and de-escalation. *Psychol Addict Behav* 1998;12(1):14-27.
11. Windle M. A longitudinal study of antisocial behaviors in early adolescence as predictors of late adolescent substance use: gender and ethnic group differences. *J Abnorm Psychology* 1990;99(1): 86-91.
12. Brown SA, Gleghorn A, Schuckit MA, Myers MG, Mott MA. Conduct disorder among adolescent alcohol and drug abusers. *J Stud Alcohol* 1996;57:314-324. [PubMed: 8709590]
13. Dimileo L. Psychiatric symptoms in adolescent substance abusers. *Am J Psychiatr* 1989;146:1212-1214. [PubMed: 2788369]
14. Kandel DB, Johnson JG, Bird HR, Canino G, Goodman SH, Lahey BB, Regier DA, Schwab-Stone M. Psychiatric disorders associated with substance use among children and adolescents: findings from the methods for the epidemiology of child and adolescent mental disorders (MECA) study. *J Abnorm Child Psychol* 1997;25(2):121-132. [PubMed: 9109029]
15. Kandel DB, Johnson JG, Bird HR, Weissman MM, Goodman SH, Lahey BB, Regier DA, Schwab-Stone ME. Psychiatric comorbidity among adolescents with substance use disorders: findings from the methods for the epidemiology of child and adolescent mental disorders (MECA) study. *J Am Acad Child Adolesc Psych* 1999;38(6):693-699.
16. Windle M, Davies PT. Depression and heavy alcohol use among adolescents: concurrent and prospective relations. *Dev Psychopathol* 1999;11(4):823-844. [PubMed: 10624728]

17. Beitchman JH, Douglas L, Wilson B, Johnson C, Young A, Atkinson L, Escobar M, Taback N. Adolescent substance use disorders: findings from a 14-year followup of speech/language-impaired and control children. *J Clin Child Psychol* 1999;28:312–321. [PubMed: 10446680]
18. Brook JS, Cohen P, Brook W. Longitudinal study of co-occurring psychiatric disorders and substance use. *J Am Acad Child Adolesc Psych* 1998;37(3):322–330.
19. Fergusson DM, Lynskey MT, Horwood LJ. The short-term consequences of early onset cannabis use. *J Abnorm Child Psychol* 1996;24:499–512. [PubMed: 8886945]
20. Lewinsohn PM, Hops H, Roberts RE, Seeley JR, Andrews JA. Adolescent psychopathology: I. Prevalence and incidence of depression and other DSM-III-R disorders in high school students. *J Abnorm Psychology* 1993;102:133–144.
21. Hagan J, McCarthy B. Streetlife and delinquency. *Br J Sociol* 1992;43(4):533–561. [PubMed: 1477723]
22. Kaufman JG, Widom CS. Childhood victimization, running away, and delinquency. *J Res Crime Delinq* 1999;36(4):347–370.
23. Baron SW, Hartnagel TF. Street youth and criminal violence. *J Res Crime Delinq* 1998;35(2):166–192.
24. Booth RE, Zhang Y. Conduct disorder and HIV risk behaviors among runaway and homes adolescents. *Drug Alcohol Depend* 1997;48:69–76. [PubMed: 9363405]
25. Fors SW, Rojek DG. A comparison of drug involvement between runaways and school youths. *J Drug Educ* 1991;21:13–25. [PubMed: 2016661]
26. Forst ML, Crim D. A substance use profile of delinquent and homeless youths. *J Drug Educ* 1994;24:219–231. [PubMed: 7844695]
27. Kooperman C, Rosario M, Rotheram-Borus MJ. Alcohol and drug use and sexual behaviors placing runaways at risk for HIV infection. *Addict Behav* 1994;19:95–103. [PubMed: 8197897]
28. Mundy P, Robertson M, Robertson J, Greenblatt M. The prevalence of psychotic symptoms in homeless adolescents. *J Am Acad Child Adolesc Psych* 1990;29:724–731.
29. Shaffer, D.; Caton, CLM. *Runaway and Homeless Youth in New York City. New York City: A Report to the Ittleson Foundation; 1984.*
30. Unger JB, Kipke MD, Simon TR, Montgomery SB, Johnson CJ. Homeless youths and young adults in Los Angeles: prevalence of mental health problems and the relationship between mental health and substance abuse disorders. *Am J Commun Psychol* 1997;25(3):371–394.
31. Yates GL, MacKenzie R, Pennbridge J, Cohen E. A risk profile comparison of runaway and non-runaway youth. *Am J Public Health* 1988;78:820–821.
32. Baer JS, Ginzler JA, Peterson PL. DSM-IV alcohol and substance abuse and dependence in homeless youth. *J Stud Alcohol* 2003;64(5):5–14. [PubMed: 12608478]
33. Whitbeck LB, Hoyt DR, Bao W. Depressive symptoms and co-occurring depressive symptoms, substance abuse, and conduct problems among runaway and homeless adolescents. *Child Dev* 2000;71(3):721–732. [PubMed: 10953939]
34. Winters, KC.; Henly, GA. *Adolescent Diagnostic Interview Schedule and Manual. Los Angeles: Western Psychological Services; 1993.*
35. Melchior LA, Huba GJ, Brown VB, Reback CJ. A short depression index for women. *Educ Psychol Meas* 1993;53(4):117–1125.
36. Robins, LN.; Cottler, LB.; Babor, T. *Composite International Diagnostic Interview—Expanded Substance Abuse Module (CIDI-SAM). St. Louis, MO: Author; 1990.*
37. Schweitzer RD, Hier SJ. Psychological maladjustment among homeless adolescents. *Aust N Z J Psychiatry* 1993;27:275–280. [PubMed: 8363537]
38. Achenbach, TM.; Edelbrock, CS. *Manual for the Youth Self-Report and Profile. Burlington, VT: University of Vermont Department of Psychiatry; 1980.*
39. Craig TKJ, Hodson S. Homeless youth in London: I. childhood antecedents and psychiatric disorder. *Psychol Med* 1998;28:1379–1388. [PubMed: 9854279]
40. WHO. *Composite International Diagnostic Interview (CIDI). Geneva: World Health Organization; 1990.*

41. McCaskill PA, Toro PA, Wolfe SM. Homeless and matched housed adolescents: a comparative study of psychopathology. *J Clin Child Psychol* 1998;27(3):306–319. [PubMed: 9789190]
42. Winters KC, Latimer W, Stinchfield RD. The DSM-IV criteria for adolescent alcohol and cannabis use disorders. *J Stud Alcohol* 1999;60:337–344. [PubMed: 10371261]
43. Winters KC, Stinchfield RD. Current issues and future needs in the assessment of adolescent drug abuse. *NIDA Res Monogr* 1995;156:146–171. [PubMed: 8594470]
44. Wolfe SM, Toro PA, McCaskill PA. A comparison of homeless and matched housed adolescents on family environment variables. *J Res Adolesc* 1999;9:53–66.
45. Straus MA. Measuring intrafamily conflict and violence: the conflict tactics (CT) scales. *J Marriage Fam* 1979;41:75–88.
46. Yoder KA. Comparing suicide attempters, suicide ideators, and nonsuicidal homeless and runaway adolescents. *Suicide Life-Threat Behav* 1999;29:25–36. [PubMed: 10322618]
47. Parker G, Tupling H, Brown LB. A parental bonding instrument. *Br J Med Psychol* 1979;52:1–10.
48. Klimidis S, Minas IH, Ata AW. The PBI-BC: A brief current form of the parental bonding instrument for adolescent research. *Compr Psychiatry* 1992;33:374–377. [PubMed: 1451449]
49. Parker, G. *Parental Overprotection: A Risk Factor in Psychosocial Development*. New York, NY: Grune & Stratton; 1983.
50. Cubis J, Lewin T, Dawes F. Australian adolescents' perceptions of their families. *Aust N Z J Psychiatry* 1989;23:35–47. [PubMed: 2930414]
51. Parker G. The parental bonding instrument: psychometric properties reviewed. *Psychiatr Dev* 1989;4:317–335. [PubMed: 2487899]
52. Moos, RH.; Moos, BS. *Family Environment Scale Manual*. Palo Alto, CA: Consulting Psychologists Press; 1986.
53. Mas, CH. *Attribution Styles and Communication Patterns in Families of Juvenile Delinquents*. Salt Lake City, UT: Doctoral Dissertation, University of Utah; 1986.
54. Miller WR, DelBoca FK. Measurement of drinking behavior using the Form-90 family of instruments. *J Stud Alcohol* 1994;12(suppl 2):112–118.
55. Sobell, LC.; Sobell, MB. Timeline follow-back. In: Litten, R.; Allen, J., editors. *Measuring Alcohol Consumption*. Totowa, NJ: Humana Press; 1992. p. 41-72.
56. Miller, WR.; Marlatt, GA. *Manual for the Comprehensive Drinker Profile*. Odessa, FL: Psychological Assessment Resources; 1984.
57. Tonigan JS, Miller WR, Brown JM. The reliability of form 90: an instrument for assessing alcohol treatment outcome. *J Stud Alcohol* 1997;58:358–364. [PubMed: 9203116]
58. Westerberg VS, Tonigan JS, Miller WR. Reliability of form 90D: an instrument for quantifying drug use. *Subst Abuse* 1998;19(4):179–189.
59. Slesnick, N.; Tonigan, JS. Alcohol Treat Q. 22. Form 90 assessment of runaway youth's substance use: Reliability and validity. In press
60. Elliot DS, Huizinga D. Social class and delinquent behavior in a national youth panel. *Criminol Interdiscip J* 1983;21:149–177.
61. Moffitt, TE. Accommodating self-report methods to a low-delinquency culture: experience from New Zealand. In: Klein, MW., editor. *Cross-National Research in Self-Reported Crime and Delinquency*. Norwell, MA: Kluwer Academic; 1989. p. 43-66.
62. Achenbach, TM.; Edelbrock, CS. *Manual for the Child Behavior Checklist and Child Behavior Profile*. Burlington, VT: Child Psychiatry, University of Vermont; 1982.
63. Kann L, Nelson GD, Jones JT, Kolbe LJ. Establishing a system of complementary school-based surveys to annually assess HIV-related knowledge, beliefs, and behaviors among adolescents. *J Sch Health* 1989;59:55–58. [PubMed: 2927091]
64. Johnson TP, Aschkenasy JR, Herbers MR, Gillenwater SA. Self-reported risk factors for AIDS among homeless youth. *AIDS Educ Prev* 1996;8:308–322. [PubMed: 8874648]
65. Barrett PM, Duffy AL, Dadds MR, Rapee RM. Cognitive-behavioral treatment of anxiety disorders in children: long-term (6-Year) follow-up. *J Consult Clin Psychol* 2001;69(1):135–141. [PubMed: 11302272]

66. Kazdin AE, Weisz JR. Identifying and developing empirically supported child and adolescent treatments. *J Consult Clin Psychol* 1998;66(1):19–36. [PubMed: 9489260]
67. Kendall PC. Treating anxiety disorders in children: results of a randomized clinical trial. *J Consult Clin Psychol* 1994;62(1):100–110. [PubMed: 8034812]
68. Kendall PC, Flannery-Schroeder E, Panichelli-Mindel SM, Southam-Gerow M, Henin A, Warman M. Therapy for youths with anxiety disorders: a second randomized clinical trial. *J Consult Clin Psychol* 1997;65(3):366–380. [PubMed: 9170760]
69. Weisz JR, Weiss B, Han SS, Granger DA, Morton T. Effects of psychotherapy with children and adolescents revisited: a meta-analysis of treatment outcome studies. *Psychol Bull* 1995;117(3):450–468. [PubMed: 7777649]
70. Bry BH, McKeon P, Pandina RJ. Extent of drug use as a function of number of risk factors. *J Abnorm Psychology* 1982;91(4):273–279.
71. Labouvie EW, Pandina RJ, White HR, Johnson V. Risk factors of adolescent drug use: an affect-based interpretation. *J Subst Abuse* 1990;2:265–285. [PubMed: 2136115]
72. Marlatt, GA. Alcohol, the magic elixir: stress, expectancy, and the transformation of emotional states. In: Gottheil, E.; Druley, KA., editors. *Stress and Addiction*. Philadelphia, PA: Brunner/Mazel, Inc.; 1987. p. 302-322. *Brunner/Mazel Psychosocial Stress Series, No. 9*
73. Folkman S, Lazarus RS. If it changes it must be a process: study of emotion and coping during three stages of a college examination. *J Pers Soc Psychol* 1985;48(1):150–170. [PubMed: 2980281]
74. Folkman S, Lazarus RS. Stress processes and depressive symptomatology. *J Abnorm Psychology* 1986;95(2):107–113.
75. Chen K, Kandel DB. The natural history of drug use from adolescence to the mid-thirties in a general population sample. *Am J Public Health* 1995;85(1):41–47. [PubMed: 7832260]
76. Hill KG, White HR, Chung I, Hawkins JD, Catalano RF. Early adult outcomes of adolescent binge drinking: person-and variable-centered analyses of binge drinking trajectories. *Alcohol Clin Exp Res* 2000;24(6):892–901. [PubMed: 10888080]
77. Newcomb MD, Bentler PM. Cocaine use among longitudinal associations with social context, psychopathology, and use of other substances. *Addict Behav* 1986;11:263–273. [PubMed: 3739813]
78. Robins LN, Przybeck TR. Age of onset of drug use as a factor in drug and other disorders. *Natl Inst Drug Abuse Res Monogr* 1985;56:178–192.
79. Hawkins JD, Catalano RF, Miller JY. Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: implications for substance abuse prevention. *Psychol Bull* 1992;112(1):64–105.
80. De Rosa CJ, Montgomery SB, Kipke MD, Iverson E, Ma JL, Unger JB. Service utilization among homeless and runaway youth in Los Angeles, California: rates and reasons. *J Adolesc Health* 1999;24:449–458. [PubMed: 10401975]
81. Robertson, M. A Report of the National Institute on Alcohol Abuse and Alcoholism. Berkeley, CA: Alcohol Research Group, School of Public Health, University of Southern California; 1989. Homeless youth in Hollywood: patterns of alcohol use.
82. Latimer WW, Stone AL, Voight A, Winters KC, August GJ. Gender differences in psychiatric comorbidity among adolescents with substance use disorders. *Exp Clin Psychopharmacol* 2002;10(3):310–315. [PubMed: 12233992]
83. Kaliski EM, Rubinson L, Lawrence L, Levy SR. AIDS, runaways, and self-efficacy. *Fam Commun Health* 1990;13:60–67. 71.
84. Messer SC, Gross AM. Childhood depression and family interaction: a naturalistic observation study. *J Clin Child Psychol* 1995;24(1):77–88.
85. Miller IW, Kabacoff RI, Keitner GI, Epstein NB, Bishop DS. Family functioning in the families of psychiatric patients. *Compr Psychiatr* 1986;27(4):302–312.
86. Slesnick N, Waldron HB. Interpersonal problem-solving interactions of depressed adolescents and their parents. *J Fam Ther* 1997;11(2):234–345.
87. Vaughn CE, Leff JP. The influence of family and social factors on the course of psychiatric illness: a comparison of schizophrenic and depressed neurotic patients. *Br J Psychiatr* 1976;129:125–137.

88. Bukstein OG, Glancy LJ, Kaminer Y. Patterns of affective comorbidity in a clinical population of dually diagnosed adolescent substance abusers. *J Am Acad Child Adolesc Psych* 1992;31(6):1041–1045.
89. Knight GP, Virdin LM, Roosa M. Socialization and family correlates of mental health outcomes among Hispanic and Anglo-American children: consideration of cross-ethnic scalar equivalence. *Child Dev* 1994;65:212–224. [PubMed: 8131648]
90. Diaz T, Dusenbury L, Botvin G, Farmer-Huselid R. Factors associated with drug use among youth living in homeless shelters. *J Child Adolesc Subst Abuse* 1997;6:91–110.
91. Kipke MD, Montgomery SB, Simon TR, Iverson EF. Substance abuse disorders among runaways and homeless youth. *Subst Use Misuse* 1997;32(7–8):969–986. [PubMed: 9220564]
92. Rahdert, E., editor. *The Adolescent Assessment and Referral System Manual*. Rockville, MD: National Institute on Drug Abuse; 1991. DHHS Publication No. (ADM) 91–1735
93. McLaney MA, Delboca FK, Babor TF. A validation study of the Problem Oriented Screening Instrument for Teenagers (POSIT). *J Med Health* 1994;3:363–376.

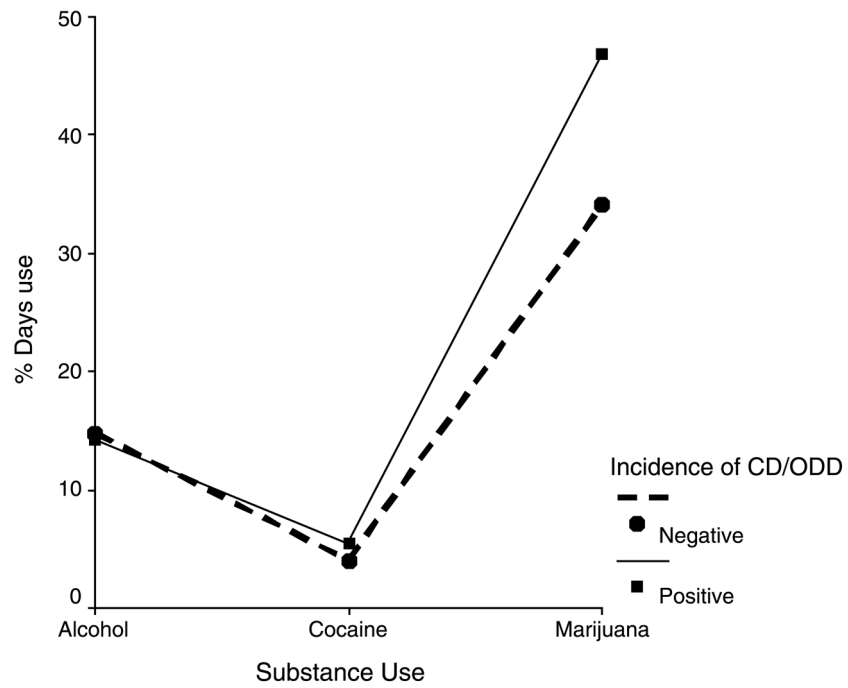


Figure 1. Percentage days use of alcohol, marijuana, and cocaine by CD/ODD diagnosis.

Table 1

Number and percentage of substance-use diagnoses for adolescents with one substance-use disorder

AL abuse	17, 17%
AL dependence	15, 15%
MA abuse	20, 20%
MA dependence	41, 41%
Other substance abuse	2, 2%
Other substance dependence	5, 5%
Total <i>N</i>	100

Table 2

Number and percentage of substance-use diagnoses for adolescents with two substance-use disorders

AL abuse, MA abuse	18, 19%
AL abuse, MA dependence	19, 20%
AL abuse, other substance abuse	0, 0%
AL abuse, other substance dependence	0, 0%
AL dependence, MA abuse	15, 16%
AL dependence, MA dependence	24, 26%
AL dependence, other substance abuse	2, 2%
AL dependence, other substance dependence	3, 3%
MA abuse, & other substance abuse	0, 0%
MA abuse, & other substance dependence	3, 3%
MA dependence, & other substance abuse	4, 4%
MA dependence, & other substance dependence	6, 6%
Total <i>N</i>	94

Table 3

Number and percentage of substance-use diagnoses for adolescents with three substance-use disorders

AL abuse, MA abuse, & other substance abuse	0, 0%
AL abuse, MA abuse, & other substance dependence	1, 3%
AL abuse, MA dependence, & other substance abuse	1, 3%
AL abuse, MA dependence, & other substance dependence	3, 9%
AL dependence, MA abuse, & other substance abuse	2, 6%
AL dependence, MA abuse, & other substance dependence	6, 19%
AL dependence, MA dependence, & other substance abuse	3, 9%
AL dependence, MA dependence, & other substance dependence	16, 50%
Total <i>N</i>	32

Table 4

Number and percentage of adolescents who are dually and multiply diagnosed who meet criteria for each mental health disorder

	Dually diagnosed (N = 77)	Multiply diagnosed (N = 59)	Total (N = 136)	Total sample (N = 226)
Conduct disorder	35 (45%)	17 (29%)	52 (38%)	23%
Oppositional defiant (ODD)	11 (14%)	20 (34%)	31 (23%)	14%
<i>CD/ODD</i> [†]	46 (60%)	36 (61%)	82 (60%)	36%
Depression	9 (12%)	28 (47%)	37 (27%)	16%
Dysthymia	0 (0%)	4 (7%)	4 (3%)	2%
Mania	1 (1%)	7 (12%)	8 (6%)	4%
Hypomania	0 (0%)	2 (3%)	2 (1%)	1%
<i>Affective disorders</i> [†]	10 (13%)	36 (61%)	46 (34%)	20%
Obsessive compulsive	5 (6%)	22 (37%)	27 (20%)	12%
PTSD	4 (5%)	12 (20%)	16 (12%)	7%
Agoraphobia	3 (4%)	12 (20%)	15 (11%)	7%
Generalized anxiety disorder (GAD)	0 (0%)	10 (17%)	10 (7%)	4%
Specific phobia	8 (10%)	22 (37%)	30 (22%)	13%
Panic disorder	0 (0%)	10 (17%)	10 (7%)	4%
Social phobia	0 (0%)	16 (27%)	16 (12%)	7%
<i>Anxiety disorders</i> [†]	20 (26%)	53 (90%)	73 (54%)	32%
Schizophrenia	0 (0%)	1 (2%)	1 (1%)	0.4%
Anorexia	0 (0%)	8 (14%)	8 (6%)	4%

[†]Note. Number of adolescents with one or more disorders in this class.

Table 5

Gender differences in diagnostic status and incidence of mental health diagnoses

	Male (N = 103)	Female (N = 123)
Only substance use diagnoses	48 (47%)	42 (34%)
Dual diagnosis	37 (36%)	40 (33%)
Multiple comorbidity	18 (17%)	41 (33%)
CD/ODD*	45 (44%)	37 (30%)
Anxiety*	22 (21%)	51 (42%)
Affective*	12 (12%)	34 (28%)

* Note. Number of male or female adolescents meeting criteria for at least one of these disorders.