Published in final edited form as:
Dev Psychopathol. 1999 ; 11(4): 845–867.

Contextual factors in substance use: A study of suburban and inner-city adolescents

SUNIYA S. LUTHAR[a] and **KAREN D'AVANZO**[b]
[a]Teachers College, Columbia University
[b]Yale University School of Medicine

Abstract

Objectives in this research were to examine contextual differences in correlates of substance use among high school students. The focus was on two broad categories of adjustment indices: *personal psychopathology* (internalizing and externalizing problems) and behaviors reflecting *social competence* (academic achievement, teacher-rated classroom behaviors, and peer acceptance or rejection). Associations between drug use and each of these constructs were examined in two sociodemographically disparate groups: teens from affluent, suburban families (n = 264), and low socioeconomic status adolescents from inner-city settings (n = 224). Results indicated that suburban youth reported significantly higher levels of substance use than inner-city youth. In addition, their substance use was more strongly linked with subjectively perceived maladjustment indices. Comparable negative associations involving grades and teacher-rated behaviors were found in both groups, and among suburban males only, substance use showed robust positive associations with acceptance by peers. Results are discussed in terms of developmental perspectives on adolescent deviance, contextual socializing forces, and implications for preventive interventions and treatment.

Substance use among American adolescents has remained at alarmingly high levels across the last several decades (Johnston, O'Malley, & Bachman, 1998). Epidemiological research indicates that after years of general decline, use of alcohol, nicotine, marijuana, and other drugs by teens escalated around 1990, and has yet to resume a significant downward trend (McMahon & Luthar, in press).

Feelings of subjective inner distress are frequently implicated in adolescents' use of substances, as indicated by the frequent co-occurrence of chemical dependency disorders with other psychiatric diagnoses (Anthony, Warner, & Kessler, 1994; Warner, Kessler, Hughs, Anthony, & Nelson, 1995). Among youth in treatment for substance abuse, researchers have established that between 25 and 50% have at least one comorbid psychiatric diagnosis of a major depressive disorder (Bukstein, Glancy, & Kaminer, 1992; Deykin, Buka, & Zeena, 1992; Stowell & Estroff, 1992).

Aside from affective disorders, anxiety disorders constitute another category of disturbed affect potentially implicated in adolescent substance use, although evidence in this regard has been less consistent. Results of a recent epidemiological study showed that whereas depression in youth served as a risk factor for substance use, anxiety symptoms did not (Costello, Erkanli, Federman, & Angold, in press). By contrast, Christie et al. (1988)

Address correspondence and reprint requests to: Suniya S. Luthar, Teachers College, Box 133, Columbia University, 525 West 120th Street, New York, NY 10027-6696.

reported a doubling of risk for subsequent drug use disorder in young adults who had an earlier disorder in either the anxiety or depressive categories. Daily cigarette smoking has also been found to be linked with an increased risk for anxiety disorders (Kandel et al., 1997), and the use of street drugs was reported to be a significant factor in discriminating between high-versus low-anxiety adolescents (Bernstein, Garfinkel, & Hoberman, 1989).

In terms of underlying mechanisms, links between substance use and disturbed affect may reflect attempts at "self-medication" (Khantzian, 1985)—that is, efforts to minimize feelings of distress. Among psychiatrically hospitalized adolescents with coexisting substance abuse problems, reasons commonly cited for substance use include efforts to reduce tension or depression (Singer & White, 1991). When depressive disorders and chemical dependency co-occur among hospitalized youth, the onset of depression has usually been found to precede that of substance abuse (Deykin, Levy, & Wells, 1987; see also Eisen, Youngman, Grob, & Dill, 1992). Similarly, research involving adult psychiatric patients has established that those with adolescent-on-set depression are more likely to have comorbid problems of substance abuse, as compared with those with adult-onset depression (McGlashan, 1989).

Consistent findings have been reported in some nonclinical samples as well. Among Mexican-origin youth of varying socioeconomic status, positive links were demonstrated between depressive symptomatology and drug use (Swanson, Linskey, Quintero–Salinas, Pumariega, & Holzer, 1992). Prospective research involving over 6000 youth across a period of almost 17 years indicated that early adolescent psychological symptoms were a significant predictor of subsequent daily drug use during adulthood (Johnson & Kaplan, 1990; see also Kashani, Keller, & Solomon, 1985; Kandel et al., 1997).

In contrast with these results substantiating the self-medication hypothesis, findings in other studies have been weaker (e.g., Huba, Newcomb, & Bentler, 1986; Kandel & Davies, 1996). Hansell and White (1991), for example, did not find effects of psychological distress on subsequent drug use, although the time lag in this study (3 years) may have been too long to allow for detecting such effects. A recent study involving low socioeconomic status African American youth indicated that highly depressed sixth graders were at no greater risk for subsequent substance use than were their "nonproblem" counterparts without symptoms of either an internalizing and externalizing nature (Miller–Johnson, Lochman, Coie, Terry, & Hyman, 1998).

Contextual Factors

Inconsistencies in findings on substance use and subjective distress may partly reflect sociocultural or contextual factors. Extant evidence in support of the self-medication hypothesis has generally been based on research with middle-class adolescents (e.g., Deykin et al., 1987; Singer & White, 1991). Among teenagers in low-income areas, on the other hand, drug use is not necessarily a strong indicator of personal psychopathology (see Luthar & Cushing, 1997; Miller–Johnson et al., 1998), but is likely to have multiple ecological determinants. Salient "risk factors" for these youngsters include ready access to drugs, opportunities for selling these, and use of substances by significant adults in their inner-city neighborhoods (Centers & Weist, 1998; Luthar, 1999; Williams, Epstein, Botvin, Schinke, & Diaz, 1998).

To our knowledge, there has been only one empirical effort to contrast psychological correlates of drug use across sociodemographically disparate groups of adolescents. Way and colleagues examined substance use in relation to self-reported depression among middle-class, suburban youth, as compared to lower-class teens in inner-city areas (Way, Stauber, Nakkula, & London, 1994). Quantitative analyses indicated positive links between substance use and depression among the suburban teens but not among their inner-city

counterparts. Furthermore, in interviews with a highly depressed subsample of 19 teens, many of the suburban youth—but almost none of their inner-city counterparts—spoke of substance use as a way to "escape problems" or to relax. The inner-city youth talked more about the negative consequences of substance use, reflecting experiences among significant others in their immediate environments.

Drug Use and Social Competence

Aside from subjectively perceived psychopathology, behaviorally manifested social competence constitutes another important adjustment dimension linked with adolescents' substance use. Social competence represents the degree to which individuals are able to meet salient societal expectations relevant to their particular developmental stage. Among children and adolescents, this construct is typically measured by behaviors reflecting adequacy in relationships with both adults and peers, as well as adequate performance in the school setting (Luthar, 1991; Masten & Coatsworth, 1998).

Adolescents who use cigarettes, alcohol, and marijuana are likely to show behavioral nonconformity in other realms as well (see Jessor & Jessor, 1977; Magnusson, 1988; Miller–Johnson et al., 1998; Moffitt, 1993). Developmental psychopathologists have shown that teenage drug use tends to occur within a syndrome of rebellious behaviors connoting low identification with conventional adults' values (Allen, Leadbeater, & Aber, 1990) and premature sexual intercourse (Capaldi, Crosby, & Stoolmiller, 1996; Tumban, Windle, & Windle, 1996). Epidemiologists, similarly, have established that use of cigarettes, alcohol, and illicit drugs is linked with elevated risk for disruptive behavior problems (Kandel et al., 1997), and prospective studies have revealed associations between tendencies toward novelty seeking and low-harm avoidance, and early onset of use of cigarettes, alcohol, and other drugs (Masse & Tremblay, 1997).

Aside from coexisting with or resulting from other nonconformist behaviors, drug use may also *cause* problems in negotiating normative developmental tasks, as substance use squanders time and resources necessary for fulfilling everyday obligations (Johnson & Kaplan, 1990). Newcomb and colleagues have argued that adolescent drug use represents premature involvement in roles and activities for which youngsters lack the necessary maturity; a consequence of this precocious development is that youngsters develop difficulties across various areas requiring mature coping, such as responsible social behavior, academic effort, and strong interpersonal relationships (Newcomb, 1987; Newcomb & Bentler, 1988a, b).

While associations between adolescent drug use and subjective distress may vary by context (as discussed previously), links with behavioral nonconformity are likely to be more consistent. In a national sample of adolescents from diverse socioeconomic and ethnic backgrounds, factor analyses revealed a robust, single general dimension of uncoventionality, encompassing substance use, school performance, and church attendance (Donovan & Jessor, 1985). Similarly, in a sociodemographically diverse group of over 7000 seventh to twelfth graders, Kandel and Davies (1996) found significant links between severity of substance use and poor performance at school, high thrill seeking, and low commitment to conventional institutions (e.g., religious involvement).

Although these research results each suggests that substance use coalesces with other nonconforming behaviors across diverse contexts, in neither study were such links—or those involving dimensions of subjective distress—examined separately among affluent as opposed to socioeconomically disadvantaged children. Conducting such comparative analyses constituted the major objective of this investigation.

The Current Study: Operationalization of Constructs and Hypotheses

The central goal in this research was to examine ways in which substance use among relatively affluent versus inner-city youth is linked with aspects of (a) self-reported psychopathology and (b) social competence. Subjectively perceived maladjustment was operationalized based on various internalizing problems—depressive symptoms and different dimensions of anxiety—as well as students' self-reports of externalizing problems. A multimethod, multi-informant approach was used to measure social competence in the school setting. Data were obtained on students' academic grades, on teachers' perceptions of their classroom behaviors, and on the quality of their peer relationships via sociometric nominations of acceptance versus rejection by classmates.

Hypotheses were that associations between self-reported psychopathology and substance use would be stronger among affluent, suburban youth than among their inner-city counterparts. Links involving behaviorally manifested everyday social competence, by contrast, would be comparable across the two groups. These hypotheses were examined separately by gender, given prior evidence that antecedents and correlates of drug use can vary substantially by gender (e.g., Johnston, O'Malley, & Bachman, 1995; Substance Abuse and Mental Health Administration, 1998; Luthar, Cushing, & Rounsaville, 1996; Windle, 1990, 1992).

Method

Sample

Participants in this study included 488 tenth-grade high school students drawn from different communities in the Northeast. Two hundred and sixty-four of these students (144 female and 120 male) were from a suburban school, and 224 (123 female and 101 male) were from an inner-city high school. Eighty-two percent of the suburban students were of Caucasian ethnicity, and 18% were minority (1% African American, 3% Latino, 8% Asian, and 6% other). Among the inner-city students, 13% were Caucasian and 87% were minority (41% African American, 31% Latino, 7% Asian, and 8% other).

The two schools sampled were chosen because of their sharply different socioeconomic status. A statewide survey of youth (Beuhring, Saewyc, Stern, & Resnick, 1996) placed the suburban school we studied in the second highest of the nine categories of school districts grouped by family socioeconomic status, and the inner-city school in the lowest of the nine categories. At the time of data collection (1996), median incomes in the suburban and inner-city towns, respectively, were $63,368 and $28,704 (national median incomes were approximately $35,000; United States Bureau of the Census, 1996). Additionally, 1996 statistics indicated that .3% of the residents in the suburban community received food stamps and .1% received some form of Aid for Families with Dependent Children; comparable statistics in the inner-city community were 18.9 and 13.8%. Finally, at the suburban and inner-city schools, respectively, percentages of students receiving free or reduced lunches were 1 and 86%.

The 264 students in the suburban school represented 91% of the entire cohort of students who were in the 10th grade of that school during the spring of 1996. Of the 25 students who did not participate, 16 did so because of lack of parents' permission and 9 because they did not wish to complete the questionnaires.

The inner-city students, assessed in the same academic year, were drawn from fourteen 10th-grade classrooms, with classes randomly selected from each of five "gate" levels (with curricula of varying difficulty). Of the 267 students in these classrooms, a total of 224 (84%)

participated in the study. The remaining 43 included 39 whose parents denied permission and 4 who did not wish to complete the questionnaires.

Measures

Substance use—Adolescents' substance use was assessed via the frequency of drug use grid used in the Monitoring the Future Study Survey (Johnston, O'Malley, & Bachman, 1984). This self-report instrument queries about frequency of use of several substances over the preceding year—nicotine, alcohol, marijuana, inhalants, crack, cocaine, and LSD—with ratings obtained on a 7 point scale anchored by "never" to "40+ times." The reliability and validity of this type of self-report have been amply documented (Johnston, Bachman, & O'Malley, 1989; Henley & Winters, 1989; Winters, Wellar, & Meland, 1993).

For major statistical analyses within this study, a composite substance use variable was created by adding scores for the three substances most frequently used by high school students (Johnston et al., 1995; Substance Abuse and Mental Health Administration, 1998): nicotine, alcohol, and marijuana (for similar data analytic strategies, see Newcomb, Maddahian, & Bentler, 1989; Ripple, Doyle, & Luthar, 1998; Swaim, Oetting, Edwards, & Beauvais, 1989). Alpha coefficients for this composite substance use index were .84 and .83 for the suburban and inner-city students, respectively.

Depression—The Children's Depression Inventory (CDI; Kovacs, 1992) is a widely used, 27-item, three-choice, self-report scale designed for school-age children and adolescents. This measure has acceptable levels of internal consistency (Kovacs, 1992), as well as criterion and concurrent validity (Saylor, Finch, Spirito, & Bennett, 1984). Alpha coefficients of internal consistency in this sample were .87 and .86 in the suburban and inner-city schools, respectively.

Anxiety—The Revised Children's Manifest Anxiety Scale (R-CMAS; Reynolds & Richmond, 1985) is a dichotomous choice, 37-item self-report measure. The instrument provides scores on three dimensions of anxiety: social anxiety (e.g., "I feel alone even when there are other people with me"), physiological anxiety (e.g., "My hands feel sweaty"), and worry (e.g., "I worry when I go to bed at night"). These three dimensions of anxiety were each considered in analyses for this study, given (a) equivocality in prior findings on links between overall anxiety and adolescents' substance use (described earlier) and (b) the conceptual distinctness of these different anxiety domains (Reynolds & Richmond, 1985).

Acceptable reliability and validity coefficients have been reported for R-CMAS subscales (Reynolds & Richmond, 1985). Alpha coefficients in this sample among suburban and inner-city students, respectively, were .69 and .67 for social anxiety, .64 and .63 for physiological anxiety, and .80 in both cases for worry.

Delinquency—The Self-Report Delinquency Checklist (SRD; Elliot, Dunford, & Huizinga, 1987) asks about the occurrence of delinquent acts at home, at school, and in the community. The measure includes 37 items rated on a 4-point scale (1, never; 4, very often), and the total score reflects the severity of delinquent behavior. The SRD has been shown to be a valid and reliable instrument (Huizinga & Elliot, 1986).

To avoid redundancy in statistical associations with the central construct of interest—adolescent drug use—six items on the SRD which pertain to substance use (e.g., "used alcohol, such as beer, wine, or hard liquor") were removed in deriving total delinquency scores. Alpha coefficients of the resultant SRD were .89 and .92, respectively, in the suburban and inner-city schools sampled here.

Academic grades—Both the schools in this study used tracking systems with curricula varying in difficulty across different tracks, and each school employed a specific grid to permit comparisons of students' academic achievement across different tracks. The suburban school had three different tracks and the inner-city school had five. As in our prior research (Luthar, 1991, 1995), the standard conversion grid used by each school, supplied by the principals, was used to convert all grades to a comparable scale. These scores were then standardized within school for further statistical analyses.

Teacher ratings—The Teacher-Child Rating Scale (T-CRS; Hightower et al., 1986) was given to English teachers of all students in this sample. A 36-item scale, the T-CRS assesses behaviors within two domains with three scores within each: problems (Acting Out, Shy–Anxious, and Learning) and adjustment (Frustration Tolerance, Assertive Social Skills, and Task Orientation). Acceptable psychometric properties have been reported for this measure (Hightower et al., 1986; Luthar, 1995). Alpha coefficients for the problem and adjustment subscales ranged between .89 and .96 for the suburban youth (median .92) and between .82 and .96 for the inner-city youth (median .92).

Peer acceptance or rejection—Coie, Dodge, and Coppotelli's (1982) sociometric procedure was used to ascertain peer acceptance and rejection. This procedure entails asking children to list three students whom they like the most within their class, and three they like the least. Students were allowed to nominate classmates of either gender. The total number of positive and negative nominations that each student received was each standardized by class (to account for varying classroom sizes) for inclusion in statistical analyses. The reliability and validity of the sociometric method have been amply documented (Coie & Dodge, 1983; Coie, Lochman, Terry, & Hyman, 1992; see also Coie, Dodge, & Kupersmidt, 1990).[1]

Procedure

Data for this study were collected during two class periods. The assessments were administered in the same order to all the groups, with relatively structured, nonthreatening assessments administered at the beginning and end of each session. All questionnaires were read aloud to guard against problems due to reading difficulties. To ensure maximal participation, an incentive of $3 was offered to each student, and $1 to teachers for each student rating they completed.

Results

Descriptive data

Means and standard deviations on all variables are presented in Table 1, separately by school and gender. As seen in this table, suburban students had higher scores on substance use, physiological anxiety, overall anxiety, and days absent from school than their inner-city counterparts. At the same time, they were younger and were rated more positively by their teachers.

Gender differences were generally in expected directions, with girls reporting greater depression and anxiety, and boys greater delinquency. Girls were also at a relative advantage on teacher-rated problems and grades.

[1]In the present sample, validity for peer acceptance and rejection indices is evident in associations between these indices and peer ratings of behaviors in the classroom (Luthar & Feldman, 1999). Positive associations (all $p < .01$) were found between "like most" and peer ratings of prosocial behaviors (r ranging between .56 and .63, among suburban and inner-city females and males; median r .60), and between "like least" and peer ratings of aggressive–disruptive behaviors (r .33–.60; median .52).

To gauge the seriousness of self-reported problems in this sample, students' symptom levels were compared with national norms on three indices for which normative data are available: substance use, depression, and anxiety. As shown in Table 2, frequency of cigarette use was uniformly lower among students in this as compared to normative samples. Somewhat elevated levels were apparent for alcohol use among suburban females, and for any illicit drug among suburban males.

With regard to depressive symptoms, CDI norms indicate that only 7% of adolescent girls score above the cutoff representing clinically significant depression (Kovacs, 1992). Among suburban girls in this study, rates were 2–3 times as high: more than *one in five* (22%) reported clinically significant symptoms. The percentage for inner-city girls was 18%. Among boys, 5% of suburban youth and 1% of inner-city youth scored above the cutoff, as compared to 7% in normative samples.

On total anxiety symptoms, normative data indicate that 17% of both boys and girls generally fall above clinically significant scores (Reynolds & Richmond, 1985), and in this sample 22% of suburban girls and 17% of inner-city girls fell above the cutoff. Among boys in this sample, 26 and 18% of suburban and inner-city boys, respectively, fell above this cutoff.

Correlations among the variables are presented in Tables 3 (suburban) and 4 (inner-city), again, separately for females and males. In general, substance use showed expected patterns of correlations with other variables, being positively related to symptom indices and negatively related to social competence indices. Two exceptions were that it was positively linked with peer acceptance among suburban males and negatively related to worry among inner-city males.

Patterns of cigarettes, alcohol, marijuana, and hard drug use are displayed graphically in Figure 1. As shown in this figure, females in the suburban school consistently showed the lowest levels of abstention and among the highest use of cigarettes, alcohol, and marijuana, while the suburban males reported the highest use of hard drugs.

Figure 2 displays the proportions of students who abstained totally from using *any* substance, and those who reported any use of different substance individually or in combination with others. Twenty-four percent of suburban females were totally abstinent as compared to 32% of suburban males, 29% inner-city females, and 32% inner-city males ($\chi^2(3) = 2.28$, *ns*). As shown in the last set of bars in the figure, 35% of suburban girls had used all of the substances at least once, followed by 32% of suburban boys, 22% inner-city boys, and 15% inner-city girls ($\chi^2(3) = 16.9$, $p < .0091$).

Hierarchical regression analyses

Associations between substance use and adjustment indices were examined via hierarchical regression analyses. Separate models were tested for indices of subjectively perceived maladjustment, and behavioral indicators of social competence.[2] In both equations, the sociodemographic variables of school, students' ethnicity (Caucasian vs. other minority), and age were entered at the outset. These were followed by the relevant symptom or competence indices as main effects. Among the various main effect terms, priority in order of entry was given to those about which there is relatively little research evidence vis-à-vis

[2]Subjective reports of maladjustment and behavioral indicators of social competence were tested separately given that (a) evidence that can these represent conceptually and empirically distinct dimensions (Luthar, 1991; Luthar, Cicchetti, & Becker, in press) and (b) distinct hypotheses were articulated for the two sets of constructs in this study. To rule out Type I errors in the findings, however, an additional analysis was conducted with all adjustment indicators included as main effects and only self-reported maladjustment indices in interaction terms. Results were essentially identical to those displayed in Tables 4 and 5.

links with drug use, as opposed to those for which links have been amply documented (see introductory section). Thus, anxiety and depressive symptoms were given precedence over self-reported delinquency; and peer acceptance or rejection, followed by teacher ratings of classroom behaviors, were entered before school grades.[3]

Finally, interaction terms involving school and each adjustment index were entered as a block to test for contextual differences in associations. To guard against Type I errors, individual terms within particular blocks were examined only if the block as a whole accounted for a statistically significant increase in R^2. As noted earlier, separate analyses were run for boys and girls in view of prior evidence on gender differences in correlates of substance use.

Results of these analyses are displayed in Tables 5 and 6. As shown in Table 5, equations involving symptom indices accounted for 42 and 33% in females' and males' substance use scores, respectively. Among the symptom indices, significant effects were found for depression and delinquency among females, whereas among males main effect links were found for worry and delinquency.

For both gender groups, the set of interaction terms yielded statistically significant increases in R^2 (.04 and .05, respectively, $p < .01$). Additional analyses showed significant effects for School × Delinquency for both females and males, School × Physiological anxiety for females, and School × Depression for males. These effects are displayed in Figure 3. In all cases, symptom indices were more strongly related to substance use scores among students from the suburban school than those from the inner-city school.

Regression equations involving social competence indices explained 28 and 26% of the variability of females' and males' substance use scores, respectively. Main effect associations (all in positive directions) were found for peer rejection among females and for peer acceptance among both females and males. Teacher ratings of problem behaviors were positively related to substance use among both females and males, and grades were inversely related to males' substance use.

The block of interaction terms involving school and each of the competence variables was not statistically significant (R^2 change .02 females, .03 males). Consequently, individual terms within the block were not examined.

Replicatory analyses

The regression analyses reported in Tables 5 and 6 were rerun with cigarettes, alcohol, and marijuana considered individually as outcome variables, and then with the latter two (mood-altering substances) combined as a pair. Results in all cases were similar to those reported in the tables, with similar interaction effects involving school. In addition, we reran all central analyses with scores transformed on to a logarithmic scale, as substance use scores were not normally distributed. Again, results were similar to those reported.

Curvilinear trends

Given prior suggestions of curvilinear links between adolescents' substance use and their behavioral competence (e.g., Shedler & Block, 1990), exploratory regressions were run with the relevant interaction term (Substance Use × Substance Use) entered after controlling for sociodemographic background variables. Outcome variables were depression, three

[3]Even when the order of entry of main effect terms was allowed to vary, results for interaction terms—of central interest in this research—remained the same.

dimensions of anxiety, delinquency, peer acceptance, peer rejection, grades, attendance, and teacher ratings on problems and adjustment. To guard against Type 1 errors, Bonferroni corrections were applied and terms were considered significant at $p < .005$ (.05/11). None of the interaction terms reached this level of statistical significance.

Psychopathology versus competence indices

A final set of analyses was conducted to determine which of the adjustment indices considered in this study would retain significant links with substance use after having considered *all* other adjustment indicators. Applying Bonferroni corrections again, terms were considered significant at $p < .005$ (.05/11). Results indicated that only self-reported delinquency retained unique associations within all four subgroups, with ΔR^2 values of .15 ($\beta = .51$) and .12 ($\beta = .40$) for suburban females and males respectively, and .08 ($\beta = .34$) and .09 ($\beta = .40$) for inner-city females and males. Aside from this, among suburban boys only, unique effects were found for peer acceptance ($\Delta R^2 = .05$, $\beta = .25$).

Discussion

Substance use levels among affluent, suburban teenagers were significantly higher than among their inner-city counterparts and, as hypothesized, were more strongly related to their self-reported maladjustment. Also consistent with hypotheses, substance use among both groups of adolescents showed comparable links with aspects of behaviorally manifested social competence. Whereas associations with indices reflecting conformity to authority (academic grades and teacher ratings) were negative in direction, those with peer acceptance were of positive valence. Each of these results is discussed in turn.

Substance use among suburban youth

Relatively affluent youth were at a disadvantage compared to inner-city teens across all measures of substance use: use of cigarettes, alcohol, and marijuana considered individually as well as in combinations with each other and other illegal drugs. Findings consistent with these were reported in a recent statewide survey of high school youth in Connecticut (Beuhring, Saewyc, Stern, & Resnick, 1996). As compared to students in four other groups defined by decreasing family socioeconomic status, students in the most affluent group were the most likely to smoke cigarettes, with barely half (54%) the students reporting never having smoked in the past year. They also reported the highest prevalence of regular alcohol use, with more than 25% of 11th graders reporting daily or weekly alcohol use.

Results such as these may partially reflect confounds between socioeconomic status and ethnicity. As it was not possible to tease apart family affluence and Caucasian ethnicity in this study, our findings could be reinterpreted merely as mirroring what has been demonstrated previously (i.e., that Caucasians have higher levels of substance use than do minority youth; Johnston, O'Malley, & Bachman, 1995; Landrine, Richardson, Klonoff, & Flay, 1994; Substance Abuse and Mental Health Administration, 1998).

On the other hand, there is some prior evidence that even when ethnicity is held constant, affluent children may still manifest elevated drug use. In a study of children Mexican origin in the United States, Swanson and colleagues (1992) found a U-shaped curve in links between family socioeconomic status and children's use of illicit drugs, with those from the most wealthy families being comparable to those in extreme poverty, and those from middle-class families reflecting substantially lower levels of drug use.

Aside from confounds involving ethnicity, it is also possible that greater substance use among suburban teens reflected reporting biases, as they may have been less afraid to acknowledge drug use than their inner-city counterparts (e.g., because of greater confidence

in anonymity or lack of punitive consequences). In contrast to reports of drug use, however, inner-city youth did *not* report less involvement in delinquent acts than suburban teens. Moreover, they had higher levels (as would be expected) of witnessing violence in their communities (Ripple et al., 1998) and of uncontrollable negative life events.[4] Their apparent willingness to acknowledge problems across these diverse domains, along with the high coefficients of internal consistency and construct validity in this data set, suggest that the inner-city youth were unlikely to have underreported their substance use extensively.

Assuming that the affluent youth were, in reality, using substances more than their low-SES counterparts, a range of explanations might be considered, among the simplest of which rests on ease of acquisition. Given their greater financial resources, suburban youngsters may simply have had more cash readily available to purchase drugs (Swanson et al., 1992). Secondly, suburban youth may have been less afraid to experiment with drugs than inner-city teens, who are surrounded by many illustrations of the perils of drug use in their everyday lives. As Way and colleagues (1994) have established, many inner-city youth are motivated to remain abstinent because they have observed serious effects of long-term drug use among family members and friends in their communities.

Substance use and subjective distress among suburban youth

A third possibility underlying the present results is that elevated substance use reflects a syndrome of adjustment difficulties among many suburban teens, and this postulate derives from several related findings. First, substance use was more strongly related to diverse self-reported problems among suburban youth than among inner-city youth (as hypothesized). Second, adjustment problems themselves were surprisingly high among the affluent teens. Overall levels of anxiety were significantly higher among suburban than low socioeconomic status youth. Depressive symptoms were marginally higher, although differences were not statistically significant. On self-reported delinquency, as noted earlier, the two groups were comparable.

What renders these findings particularly striking is the nature of the group to which suburban teens were compared here: low-socioeconomic status adolescents who routinely encounter potent environmental adversities. Despite the material resources ostensibly available to them, then, the suburban youth in this study reported at least as much personal maladjustment as did adolescents who contend with serious economic deprivation, neighborhood disadvantage, and, frequently, experiences of racism, limited opportunities for legal employment, and exposure to community violence (see Luthar, 1999).

Findings of comparable distress in these two groups suggest that suburban youth may struggle with a set of unique life stressors, and distinct possibilities in this regard lie in high pressures to achieve. Conversations with the suburban students in this study and their school administrators indicated that for many of these teens, gaining admission to stellar colleges is emphasized a top priority. As a consequence, most feel highly driven to excel not only at academic but also at multiple extracurricular activities.

These speculations resonate with results of diverse social science investigations. Ethnographic research has established that many upper-middle-class parents strongly desire that their children's educational and occupational attainments will surpass their own (Proweller, 1998). In epidemiological research involving over 400 adolescents, Goodman, Simonoff, and Stevenson (1995) found positive associations between parents' intelligence and children's symptomatology, and suggested that bright, achievement-oriented parents

[4]Mean values for the suburban and inner-city samples, respectively, were 1.92 and 2.30 for uncontrollable negative life events and 14.13 and 16.88 for violence exposure ($p < .05$ in both cases).

may often place excessive pressures to achieve on their children. Similarly, recent data from the Zurich Epidemiological Study revealed that pressure to achieve at school was a significant predictor of substance use among preadolescents and adolescents (Steinhausen & Metzke, 1998).

Feelings of isolation might also partially underlie the findings of high subjective distress among suburban teens in this study. Sociologist Hochschild's (1997) analysis of American family life revealed that among many upper-middle-class families, junior high and high school students are left alone at home for several hours a week, not because of lack of child care but because parents often believe that this promotes children's self-sufficiency. Furthermore, these youngster's needs for emotional closeness often suffer as the demands of professional parents' careers erode relaxed "family time," and children are shuttled between various after-school activities. Assertions such as these, once again, were echoed in our own informal conversations with suburban youth in this study. The more troubled students appeared to experience a combination of high internal and external pressures to achieve, chronic feelings of aloneness, having a great deal of unsupervised spare time—and ample money to do with as they wished.

Drug use and behavioral competence indices

As expected, drug use showed comparable associations with behavioral competence indices among both groups in this study, being negatively linked with grades and with teacher-rated behaviors in each case. In contrast to the negative valence of these links, associations with peer popularity were positive in direction and were particularly strong among suburban males.

Varying associations such as these, involving different behavioral indices, have been reported previously. In comparison with nonusers, adolescent substance users tend to display more difficulties in academics, relationships with adults, and commitment to conventional institutions, yet at the same time are more oriented toward their peers (Kandel & Davies, 1996). Similarly, research involving preadolescents has shown that their substance use is negatively related to concurrent academic success and competence in relationships with adults but is positively related to peer competence (Wills, Vaccaro, & McNamara, 1992).

Among suburban males in this study, links between levels of drug use and peer popularity were strikingly robust, retaining statistical significance even after effects of all other adjustment indices had been considered. These findings establish that drug use among suburban male youth does not inevitably connote high personal maladjustment (see Cicchetti & Rogosch, in press) but in fact may often signal relatively high status in the peer group. Consistent with this suggestion is prior research evidence that among adolescent males (more so than females) alcohol use tends to be tied in with social conformity motives, such as drinking to fit in with a peer group or to avoid being left out (Cooper, 1994).

Our results on adolescents' drug use and their peer status extend prior research in several ways. First, the present findings suggest modest peer approval for substance use not only by close friends (see O'Donnell, Hawkins, & Abbott, 1995; Williams et al., 1998; Windle & Barnes, 1988) but also possibly by the wider peer group. Second, our results did not indicate curvilinear associations between substance use and social competence (see Shedler & Block, 1990), but linear ones. At least among suburban males, the peer group seemed to endorse fairly high levels of drug use, and not just occasional experimentation.

Third, the present results indicate that adolescent peer approval for counterconventional behaviors transcends socioeconomic boundaries, rather than being limited to disenfranchised neighborhoods where aggressive behaviors are often adaptive (cf. Luthar, 1995; Luthar &

McMahon, 1996). Collectively, these findings lend support to developmental perspectives on adolescent-limited delinquency. Moffitt (1993) has argued that regardless of family background, all American teenagers are drawn toward counterconventional behaviors due to the gap between their attainment of physical maturity and opportunities to assume adult roles with the attendant privileges. As a consequence of this maturity gap, many adolescent groups view activities that symbolize adult status—including substance use and premature sexuality—in a relatively positive light.

Gender differences in associations

Whereas substance use was linked with peer acceptance among suburban boys, it was associated with *rejection* by peers among their female counterparts.[5] These differential associations may reflect the peer group's intolerance for "nonfeminine" modes of behavior among adolescent girls (see Nolen–Hoeksema, 1990; Pipher, 1994). In general, substance use meets with greater societal disapproval and censure among females than among males (Luthar, Cushing, & Rounsaville, 1996; Luthar & Suchman, in press).

In considering gender differences, also noteworthy are the problems of both depression and substance use documented among suburban females in this study. One in five of these females reported clinically significant depressive symptoms, rates 2 to 3 times as high as those in normative samples. In addition, the incidence of multiple-drug use was highest among this subgroup.

These findings are troubling given the potential for spillover of the girls' adjustment difficulties across multiple domains. The use of substances to manage negative affect, which occurs more among females than males (see Kandel, Ravies, & Davies, 1991; King et al., 1996; Pipher, 1994), tends to be more deleterious for overall adaptation than is substance use for social reasons (Cooper, 1994; Windle & Barnes, 1988). Furthermore, Kandel and colleagues have established that cigarette smoking represents a greater risk for subsequent problems among females as compared to males, not only in terms of later use of illicit drugs, but also the development of other psychiatric difficulties (Kandel et al., 1997; Kandel & Yamaguchi, 1993).

While our own data cannot illuminate reasons for the problems detected among suburban females, ethnographic and clinical findings point to the possible salience of gender-role socialization. In upper-middle-class communities, females frequently encounter several sharply conflicting expectations from others (Pipher, 1996; Proweller, 1998; see also Gjerde, 1995; Nolen–Hoeksema, 1990). On the one hand, adults in their achievement-oriented communities strongly emphasize excellence at school, and on the other hand the media, and often the peer group, convey powerful messages that to display high intelligence or academic competence is "non-feminine" and thus undesirable. Additional stressors may derive from high concern with personal appearance (Luthar & Feldman, 1999; Pipher, 1994), as preoccupation and dissatisfaction with their physical appearance tend to be particularly pronounced among young Caucasian women (Abrams, Allen, & Gray, 1993; Cash & Henry, 1995; Rodin, Silberstein, & Striegel–Moore, 1984; Rucker & Cash, 1992). In future research, there is clearly a need for systematic inquiry into the diverse sources of stress that are potentially unique to this subgroup of adolescent girls.

Teacher perceptions of suburban and inner-city youth

In notable contrast to findings on substance use and several psychological indices, suburban youth fared substantially better than inner-city teens on teacher ratings of classroom

[5]Correlation coefficients between "liked least" and substance use among boys versus girls were significantly different, $z = 2.94$.

behaviors. Confounds involving ethnicity may partly explain these results, for teachers often rate Caucasian students more positively than minority youth (e.g., Fabrega, Ulrich, & Loeber, 1996). An alternative explanation may rest on different views of "acceptable" student behavior among teachers in two schools. What is seen as problem behavior within an inner-city school may be viewed as creative self-expression by the suburban teachers and thus responded to with greater tolerance. Finally, it is possible that these differences reflect authentic differences in adolescents' conformity to stipulated codes of classroom behavior. School may represent a domain in which suburban teens feel particularly pressured to conform, given the high emphasis placed on their academic accomplishments. Just as inner-city youth are keenly sensitive to the dangers of experimenting with drugs, suburban students may be particularly attuned to the hazards of performing poorly at school in terms of ramifications for their long-term success.

Treatment and policy implications

The most prominent treatment implication of our findings is that service providers must attend to issues of multifinality and equifinality in adolescent adjustment, remaining sensitive to the varying pathways via which teenagers can come to use cigarettes, alcohol, and illicit substances (Cicchetti & Rogosch, in press). There is little question that the correlates of substance use vary substantially across different subgroups of adolescents: females as opposed to males, and relatively affluent as opposed to economically disadvantaged.

Beyond these broad directions, we consider, in turn, specific treatment considerations relevant to each of the demographic groups we studied. Considering the inner-city youth first, social scientists are increasingly focusing on the need for—and are providing useful directions for—preventive interventions for these youth, who confront a host of insidious stressors related to poverty, neighborhood blight, and, frequently, racism and discrimination (see Conduct Problems Prevention Research Group, 1992; Cowen et al., 1996; Huston, 1994; Knitzer, in press; Luthar, 1999; Luthar & Burack, in press; McLoyd, 1997; Seitz, in press; Yoshikawa, 1994; Zigler, Kagan, & Hall, 1996). We bring to this body of work two specific considerations for preventive interventions that pertain to substance use in particular.

First, although inner-city teens' substance use levels were lower than those of suburban students in this study, at least two factors underscore the need for interventions for these youth. First, their profiles by no means connote a benign abstemiousness. Many of these youngsters experience fears that are potentially highly upsetting, stemming from their exposure to significant others' suffering the effects of drug addiction (Way et al., 1994). Second, the long-term ramifications of even trivial experimentation with drugs can be far more serious for disadvantaged and minority youth than others. Among siblings of low socioeconomic status drug addicts, for example, those who had ever tried drugs as teenagers have been found to be almost 5 times as likely as others to manifest serious problems of drug abuse as adults (Luthar, Anton, Merikangas, & Rounsaville, 1992; see also Kandel & Davies, 1996).

To our knowledge, treatment needs of suburban youth in upwardly mobile communities have not been specifically addressed in the scientific literature, possibly because these youngsters are rarely seen as being "in need." Widespread beliefs in society are that if these children are in distress, their parents' economic resources will be effectively harnessed to help them. Yet, epidemiological researchers have established that although adults are usually aware when children are depressed, they rarely seek psychiatric help. Puura and colleagues (1998) found that among children reporting clinically significant depressive symptoms, adults had sought treatment for less than 1 in 20 of the girls and less than 1 in 10 of the boys.

Assistance was usually sought only when the child's symptoms were those that caused annoyance or inconvenience to adults, such as disobedience, restlessness, or asthma. Data such as these strongly emphasize the need for educators, clinicians, and policy makers to recognize that children and adolescents, *including the most affluent,* are not independent agents, able to secure their own help when experiencing high psychological distress (Johnson & Kaplan, 1990).

In appraising findings from this research, we believe also that it is critical to guard against blaming suburban parents for problems documented among their children. Stereotyped views of affluent individuals are that they are immersed in the (largely selfish) pursuit of their personal ambitions, with little heed to their children's welfare (see Hurley & Lustbader, 1997; Wolfe & Fodor, 1996), assumptions for which there is little empirical basis. Mastery motivation, exemplified in professional "ambition," is a universal human drive (Freud, 1962; White, 1959) and all parents, regardless of background, seek to provide their children with the best opportunities they can to foster culturally relevant competencies (Garcia Coll, Meyer, & Brillon, 1995). Equally, it is important to explicitly recognize that neither formal education nor material wealth guarantees emotional well-being or equanimity in parenting. In point of fact, clinicians have written that many upper socioeconomic status parents often feel that they "are supposed to be better able to handle their problems than (others); and a very important part of 'looking good' is never letting any chinks in (their or their family's) emotional armor become visible" (Wolfe & Fodor, 1996, p. 80). Notwithstanding their education or material resources, therefore, many parents in suburban communities may remain in urgent need of psychological and social support, both for themselves as individuals and more specifically, in relation to the challenges of parenting.

Caveats and limitations

Findings of this study pertain to self-reported substance use and cannot be assumed to generalize to psychiatric diagnoses of substance abuse. Indices necessary to make diagnoses of the latter, such as dependency symptoms and impairments in functioning, were not measured here. Furthermore, the sole reliance on self-reports to measure substance use may have led to some inaccuracies in assessment, although there is evidence that self-reports generally show good agreement with other data sources (Block, Block, & Keyes, 1988; Marquis, Duan, Marquis, & Polich, 1981; Stacey, Widaman, Hays, & DiMatteo, 1985).

There is also a potential problem of selectivity in the present sample, for the more troubled students may have already dropped out of school by the 10th grade or may have elected not to participate in the research. Thus, associations documented found here may not be replicated among the most vulnerable teens in these communities. Furthermore, dropout rates are likely to have been higher in the inner-city than the suburban city school, potentially resulting in greater representation of relatively well-adjusted youth in the former group. While such differential representation may have led to relative underestimation of inner-city students' difficulties, it has little bearing on the absolute rates of problems among suburban teens (e.g., on drug use or depression). The more affluent students fared poorly not only in comparison with the economically disadvantaged participants in this research but also in relation to national normative data.

Finally, the cross-sectional nature of this study precludes any inferences about causes of substance use as opposed to its effects. It is possible that drug use among affluent youth leads to more psychological distress, rather than the converse. Even allowing for such alternative interpretations, however, our findings still establish that as compared to inner-city youth the suburban youngsters manifested (a) higher levels of self-reported drug use including polysubstance use, (b) higher levels of other adjustment difficulties related to substance use (e.g., anxiety), (c) stronger associations between drug use and indices of

subjectively perceived psychopathology, and (d) stronger peer endorsement of drug use among males.

Offsetting the various limitations of this study are some strengths, most notable among which is the availability of data on two highly disparate groups. Although several researchers have documented levels of substance use and associated problems in particular groups of teens, there have been few attempts to compare groups that are sociodemographically so different. Such comparisons within this study revealed several differences, some anticipated and others more startling. Collectively, the results resonate with Takanishi's exhortations (1996) that social policies for adolescents must be directed at *all* members of the age group and not just those perceived as problematic, and underscore her assertion that "Economic advantage or residential location may offer only limited immunity from the risks of the adolescent years" (p. 26).

Acknowledgments

This work was supported by Research Scientist Development Award K21-DA00202, by P50-DA09241, RO1-DA10726, RO1-DA11498, and by funding from the William T. Grant Foundation. Our sincere thanks to Julie Feldman, Keith Jacoby, Scyatta Wallace, and Gretta Cushing for their help in conducting the research, to the students who participated, and to school administrators who generously offered their insights.

References

Abrams KK, Allen LR, Gray J. Disordered eating attitudes and behaviors, psychological adjustment, and ethnic identity: A comparison of Black and White female college students. International Journal of Eating Disorders. 1993; 14:49–57. [PubMed: 8339099]

Aiken, LS.; West, SG. Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage; 1991.

Allen J, Leadbeater B, Aber J. The relationship of adolescent's expectations and values to delinquency, hard drug use, and unprotected sexual intercourse. Developmental Psychopathology. 1990; 2:85–98.

Anthony JC, Warner LA, Kessler RC. Comparative epidemiology of dependence on tobacco, alcohol, and inhalants: Basic findings from the National Comorbidity Survey. Experimental and Clinical Psychopharmacology. 1994; 2:244–268.

Bernstein GA, Garfinkel BD, Hoberman HM. Self-reported anxiety in adolescents. American Journal of Psychiatry. 1989; 146:384–386. [PubMed: 2919697]

Beuhring, T.; Saewyc, EM.; Stern, CB.; Resnick, MD. Voice of Connecticut Youth: A statewide survey of adolescent health. Minneapolis, MN: University of Minnesota; 1996.

Block J, Block JH, Keyes S. Longitudinally foretelling drug usage in adolescence: Early childhood personality and environmental precursors. Child Development. 1988; 59:336–355. [PubMed: 3359859]

Bukstein OG, Glancy LJ, Kaminer Y. Patterns of affective comorbidity in a clinical population of dually diagnosed adolescent substance abusers. Journal of the American Academy of Child and Adolescent Psychiatry. 1992; 31:1041–1045. [PubMed: 1429402]

Capaldi DM, Crosby L, Stoolmiller M. Predicting the timing of first sexual intercourse for at-risk adolescent males. Child Development. 1996; 67:344–359. [PubMed: 8625717]

Cash TF, Henry PE. Women's body images: The results of a national survey in the U.S.A. Sex Roles. 1995; 33:19–28.

Centers NL, Weist MD. Inner city youth and drug dealing: A review of the problem. Journal of Youth and Adolescence. 1998; 27:395–411.

Christie KA, Burke JD, Regier DA, Rae DS, Boyd JH, Locke BZ. Epidemiologic evidence for early onset of mental disorders and higher risk of drug abuse in young adults. American Journal of Psychiatry. 1988; 145:971–975. [PubMed: 3394882]

Cicchetti D, Rogosch FA. Psychopathology as risk for adolescent substance use disorders: A developmental psychopathology perspective. Journal of Clinical Child Psychology. in press

Coie JD, Dodge KA. Continuities and changes in children's social status: A five-year longitudinal study. Merrill–Palmer Quarterly. 1983; 29:261–282.

Coie JD, Dodge KA, Coppotelli H. Dimensions and types of social status: A cross-age perspective. Developmental Psychology. 1982; 18:557–570.

Coie, JD.; Dodge, KA.; Kupersmidt, JB. Peer group and social status. In: Asher, SR.; Coie, JD., editors. Peer rejection in childhood. New York: Cambridge University Press; 1990.

Coie JD, Lochman RT, Terry R, Hyman C. Predicting early adolescent disorder from childhood aggression and peer rejection. Journal of Consulting and Clinical Psychology. 1992; 60:783–792. [PubMed: 1401394]

Conduct Problems Prevention Research Group. A developmental and clinical model for the prevention of conduct disorders: The Fast Track Program. Development and Psychopathology. 1992; 4:509–527.

Cooper ML. Motivations for alcohol use among adolescents: Development and validation of a four-factor model. Psychological Assessment. 1994; 6:117–128.

Costello EJ, Erkanli A, Federman E, Angold A. The development of psychiatric comorbidity with substance abuse in adolescents: Effects of timing and gender. Journal of Clinical Child Psychology. in press.

Cowen, EL.; Hightower, AD.; Pedro–Carroll, JL.; Work, WC.; Wyman, PA.; Haffrey, WG. School-based prevention for children at risk: The Primary Mental Health Project. Washington, DC: American Psychological Association; 1996.

Deykin EY, Buka SL, Zeena TH. Depressive illness among chemically dependent adolescents. American Journal of Psychiatry. 1992; 149:1341–1347. [PubMed: 1530070]

Deykin EY, Levy JC, Wells V. Adolescent depression, alcohol and drug abuse. American Journal of Public Health. 1987; 77:178–182. [PubMed: 3492151]

Donovan J, Jessor R. Structure of problem behavior in adolescence and young adulthood. Journal of Consulting and Clinical Psychology. 1985; 53:890–904. [PubMed: 4086689]

Eisen SV, Youngman DJ, Grob MC, Dill DL. Alcohol, drugs, and psychiatric disorders: A current view of hospitalized adolescents. Journal of Adolescent Research. 1992; 7:250–265.

Elliot, DS.; Dunford, FW.; Huizinga, D. The identification and prediction of career offenders utilizing self-reported and official data. In: Burchard, J.; Burchard, S., editors. Prevention of delinquent behavior. Newbury Park, CA: Sage; 1987.

Fabrega H, Ulrich R, Loeber R. Adolescent psychopathology as a function of informant and risk status. Journal of Nervous and Mental Disease. 1996; 184:27–34. [PubMed: 8551286]

Freud, S. The standard edition of the complete psychological works of Sigmund Freud. Strachey, J., editor. London: The Hogarth Press; 1962.

Garcia Coll, CT.; Meyer, EC.; Brillon, L. Ethnic and minority parenting. In: Bornstein, MH., editor. Handbook of parenting. Vol. 2. Mahwah, NJ: Erlbaum; 1995. p. 189-210.

Gjerde PF. Alternative pathways to chronic depressive symptoms in young adults: Differences in developmental trajectories. Child Development. 1995; 66:1277–1300. [PubMed: 7555216]

Goodman R, Simonoff E, Stevenson J. The impact of child IQ, parent IQ and sibling IQ on child behavioral deviance scores. Journal of Child Psychology and Psychiatry. 1995; 36:409–425. [PubMed: 7782405]

Hansell S, White H. Adolescent drug use, psychological distress, and physical symptoms. Journal of Health and Social Behavior. 1991; 32:288–301. [PubMed: 1940211]

Henley GA, Winters KC. Development of psychosocial scales for the assessment of adolescents involved with alcohol and drugs. The International Journal of the Addictions. 1989; 24:973–1001. [PubMed: 2621005]

Hightower AD, Work WC, Cowen EL, Lotyczewski BS, Spinell AP, Guare JC, Rohrbeck CA. The teacher–child rating scale: An objective measure of elementary school children's school problem behaviors and competencies. School Psychology Review. 1986; 15:393–409.

Hochschild, AR. The time bind: When work becomes home and home becomes work. New York: Henry Holt; 1997.

Huba GJ, Newcomb MD, Bentler PM. Adverse drug experiences and drug use behaviors: A one-year longitudinal study of adolescents. Journal of Pediatric Psychology. 1986; 11:203–219. [PubMed: 3723283]

Huizinga D, Elliot DS. Reassessing the reliability and validity of self-report delinquency measures. Journal of Quantitative Criminology. 1986; 2:293–327.

Hurley LP, Lustbader LL. Project support: Engaging children and families in the educational process. Adolescence. 1997; 32:523–531. [PubMed: 9360729]

Huston, AC., editor. Children in poverty. New York: Cambridge University Press; 1994.

Jessor, R.; Jessor, S. Problem behavior and psychological development: A longitudinal study of youth. New York: Academic Press; 1977.

Johnson R, Kaplan H. Stability of psychological symptoms: Drug use consequences and intervening processes. Journal of Health and Social Behavior. 1990; 31:277–291. [PubMed: 2133481]

Johnston, LD.; Bachman, JG.; O'Malley, PM. Monitoring the future: Questionnaire responses from the nation's high school seniors, 1988. Ann Arbor, MI: Survey Research Center, Institute for Social Research; 1989.

Johnston, LD.; O'Malley, PM.; Bachman, JG. Drugs and American high school students: 1975–1983. Washington, DC: U.S. Government Printing Office; 1984. (DHHS Publication No. ADM 85-1374)

Johnston, LD.; O'Malley, PM.; Bachman, JG. National Survey Results on drug use. The Monitoring the Future Study, 1975–1997: Vol. 1. Secondary school students. Ann Arbor, MI: The University of Michigan Institute for Social Research; 1998.

Kandel DB, Davies M. High school students who use crack and other drugs. Archives of General Psychiatry. 1996; 53:71–80. [PubMed: 8540779]

Kandel DB, Johnson JG, Bird HR, Canino G, Goodman SH, Lahey BB, Regioer 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. Journal of Abnormal Child Psychology. 1997; 25:121–132. [PubMed: 9109029]

Kandel DB, Ravies VH, Davies M. Suicidal ideation in adolescence: Depression, substance use, and other risk factors. Journal of Youth and Adolescence. 1991; 20:289–309.

Kandel DB, Yamaguchi K. From beer to crack: Developmental patterns of drug involvement. American Journal of Public Health. 1993; 83:851–855. [PubMed: 8498623]

Kashani J, Keller M, Solomon N. Double depression in adolescent substance users. Journal of Affective Disorders. 1995; 8:153–157. [PubMed: 3157724]

Khantzian E. The self-medication hypothesis of addictive disorders: Focus on heroin and cocaine dependence. American Journal of Psychiatry. 1985; 142:1259–1264. [PubMed: 3904487]

King CA, Ghaziuddin N, McGovern L, Brand E, Hill E, Naylor M. Predictors of comorbid alcohol and substance abuse in depressed adolescents. Journal of the American Academy of Child and Adolescent Psychiatry. 1996; 36:743–751. [PubMed: 8682755]

Knitzer, J. Early childhood mental health services through a policy and systems perspective. In: Meisels, SJ.; Shonkoff, JP., editors. Handbook of early childhood intervention. 2. New York: Cambridge University Press; in press

Kovacs, M. Children's Depression Inventory Manual. New York: Multi-Health Systems; 1992.

Landrine H, Richardson JL, Klonoff EA, Flay B. Cultural diversity in the predictors of adolescent cigarette smoking: The relative influence of peers. Journal of Behavioral Medicine. 1994; 17:331–346. [PubMed: 7932684]

Luthar SS. Vulnerability and resilience: A study of high-risk adolescents. Child Development. 1991; 62:600–616. [PubMed: 1914628]

Luthar SS. Social competence in the school setting: Prospective cross-domain associations among inner-city teens. Child Development. 1995; 66:416–429. [PubMed: 7750374]

Luthar, SS. Poverty and children's adjustment. Thousand Oaks, CA: Sage; 1999.

Luthar SS, Anton SF, Merikangas KR, Rounsaville BJ. Vulnerability to substance abuse and psychopathology among siblings of opioid abusers. Journal of Nervous and Mental Disease. 1992; 180:153–161. [PubMed: 1588332]

Luthar, SS.; Burack, JA. Adolescent wellness: In the eye of the beholder?. In: Cicchetti, D.; Rappaport, J.; Sandler, I.; Weissberg, R., editors. The promotion of wellness in children and adolescents. Newbury Park, CA: Sage; in press

Luther SS, Cicchetti D, Becker BE. The construct of resilience: A critical evaluation and guidelines for future work. Child Development. in press.

Luthar SS, Cushing G. Substance use and personal adjustment among disadvantaged teenagers: A six-month prospective study. Journal of Youth and Adolescence. 1997; 26:353–372.

Luthar SS, Cushing G, Rounsaville BJ. Gender differences among opioid abusers: Pathways to disorder and profiles of psychopathology. Drug and Alcohol Dependence. 1996; 43:179–189. [PubMed: 9023074]

Luthar, SS.; Feldman, J. The Revised Class Play for Adolescents: A study of inner-city and suburban youth; Poster symposium presented at the biennial meetings of the Society for Research in Child Development; Albuquerque, NM.. 1999 Apr.

Luthar SS, McMahon T. Peer reputation among adolescents: Use of the Revised Class Play with inner-city teens. Journal of Research on Adolescence. 1996; 6:581–603.

Luthar SS, Suchman NE. Relational Psychotherapy Mothers' Group: A developmentally informed intervention for at-risk mothers. Development and Psychopathology. in press.

Magnusson, D. Individual development from an interactional perspective: A longitudinal study. Hillsdale, NJ: Erlbaum; 1988.

Marquis, K.; Duan, N.; Marquis, M.; Polich, J. Response errors in sensitive topic surveys. Santa Monica, CA: Rand Corporation; 1981. (Report Nos. R-1710/1-HHS, Executive Summary, and R-1710/2-HHS, Estimates, Effects and Correction Options)

Masse LC, Tremblay RE. Behavior of boys in kindergarten and the onset of substance use during adolescence. Archives of General Psychiatry. 1997; 54:62–68. [PubMed: 9006402]

Masten A, Coatsworth JD. The development of competence in favorable and unfavorable environments: Lessons from research on successful children. American Psychologist. 1998; 53:205–220. [PubMed: 9491748]

Masten A, Coatsworth JD, Neemann J, Gest S, Tellegen A, Garmezy N. The structure and coherence of competence from childhood through adolescence. Child Development. 1995; 66:1635–1659. [PubMed: 8556890]

McGlashan TH. Comparison of adolescent- and adult-onset unipolar depression. American Journal of Psychiatry. 1989; 146:1203–1211.

McLoyd, VC. Children in poverty: Development, public policy, and practice. In: Damon, W.; Siegel, IE.; Renninger, KA., editors. Handbook of child psychology: Child Psychology in practice. 5. New York: Wiley; 1997. p. 135-208.

McMahon, TJ.; Luthar, SS. Outcome research and adolescent substance abuse: Moving from treatment works? to treatment works!. In: Blau, GM.; Gullotta, TP., editors. Outcome research: Interventions that work for children and families. Thousand Oaks, CA: Sage; in press

Miller–Johnson S, Lochman JE, Coie JD, Terry R, Hyman C. Comorbidity of conduct and depressive problems at sixth grade: Substance use outcomes across adolescence. Journal of Abnormal Child Psychology. 1998; 26:221–232. [PubMed: 9650628]

Moffitt TE. "Life-course-persistent" and "adolescent-limited" antisocial behavior: A developmental taxonomy. Psychological Review. 1993; 100:674–701. [PubMed: 8255953]

Newcomb M. Consequences of teenage drug use: The transition from adolescence to young adulthood. Drugs and Society. 1987; 1:25–60.

Newcomb, M.; Bentler, P. Consequences of teenage drug use: Impact on the lives of young adults. Beverly Hills, CA: Sage; 1988a.

Newcomb M, Bentler P. Impact of adolescent drug use and social support on problems of young adults: A longitudinal study. Journal of Abnormal Psychology. 1988b; 97:64–75. [PubMed: 3351114]

Newcomb MD, Maddahian E, Bentler PM. Risk factors for drug use among adolescents: Concurrent and longitudinal analyses. American Journal of Public Health. 1986; 76:525–531. [PubMed: 3485928]

Nolen–Hoeksema, S. Sex differences in depression. Stanford, CA: Stanford University Press; 1990.

O'Donnell J, Hawkins JD, Abbott RD. Predicting serious delinquency and substance use among aggressive boys. Journal of Consulting and Clinical Psychology. 1995; 63:529–537. [PubMed: 7673530]

Pipher, M. Reviving Ophelia: Saving the selves of adolescent girls. New York: Ballantine Books; 1994.

Pipher, M. The shelter of each other: Rebuilding our families. New York: Ballantine Books; 1996.

Proweller, A. Constructing female identities: Meaning making in an upper-middle class youth culture. Albany, NY: State University of New York Press; 1998.

Puura K, Almqvist F, Tamminen T, Piha J, Kumpulainen K, Rasanen E, Moilanen I, Koivisto A. Children with symptoms of depression— What do the adults see? Journal of Child Psychology and Psychiatry. 1998; 39:577–585. [PubMed: 9599785]

Reynolds, CR.; Richmond, BO. Revised Children's Manifest Anxiety Scale. Los Angeles: Western Psychological Services; 1985.

Ripple, CH.; Doyle, K.; Luthar, SS. Exposure to community violence: Incidence and correlates among inner-city and suburban adolescents. Paper presented at the biennial meeting of the Society for Research on Adolescence; San Diego, CA.. 1998 Feb-Mar.

Rodin J, Silberstein L, Striegel–Moore R. Women and weight: A normative discontent. Nebraska Symposium on Motivation. 1984; 32:267–307. [PubMed: 6398857]

Rucker CE III, Cash TF. Body images, body-size perceptions, and eating behaviors among African-American and White college women. International Journal of Eating Disorders. 1992; 12:291–299.

Saylor CF, Finch AJ, Spirito A, Bennett B. The Children's Depression Inventory: A systematic evaluation of psychometric properties. Journal of Consulting and Clinical Psychology. 1984; 52:955–967. [PubMed: 6520288]

Seitz V. Effective interventions for adolescent mothers. Clinical Psychology: Science and Practice. in press.

Shedler J, Block J. Adolescent drug use and psychological health: A longitudinal inquiry. American psychologist. 1990; 45:612–630. [PubMed: 2350080]

Singer MI, White WJ. Addressing substance abuse problems among psychiatrically hospitalized adolescents. Journal of Adolescent Chemical Dependency. 1991; 2:13–26.

Stacey AW, Widaman KF, Hays R, DiMatteo MR. Validity of self-reports of alcohol and other drug use: A multitrait-multimethod assessment. Journal of Personality and Social Psychology. 1985; 49:219–232. [PubMed: 4020615]

Steinhausen H, Metzke CW. Frequency and correlates of substance use among preadolescents and adolescents in a Swiss epidemiological study. Journal of Child Psychology and Psychiatry. 1998; 39:387–397. [PubMed: 9670094]

Stowell R, Estroff T. Psychiatric disorders in substance-abusing adolescent inpatients: A pilot study. Journal of the Academy of Child and Adolescent Psychiatry. 1992; 31:1036–1040.

Substance Abuse and Mental Health Administration. National Admissions to Substance Abuse Treatment Services: The Treatment Episode Data Set (TEDS) 1992–1996. Rockville, MD: National Clearinghouse for Alcohol and Drug Information\; 1998.

Swaim RC, Oetting ER, Edwards RW, Beauvias F. Links from emotional distress to adolescent drug use: A path model. Journal of Consulting and Clinical Psychology. 1989; 57:227–231. [PubMed: 2708609]

Swanson JW, Linskey AO, Quintero–Salinas R, Pumariega AJ, Holzer CE. A binational school survey of depressive symptoms, drug use, and suicidal ideation. Journal of the American Academy of Child and Adolescent Psychiatry. 1992; 31:669–678. [PubMed: 1644730]

Takanishi, R. Changing images of adolescents: rethinking our policies. In: Zigler, EF.; Kagan, SL.; Hall, NW., editors. Children, families, and government: Preparing for the 21st century. New York: Cambridge University Press; 1996. p. 256-267.

Tubman JG, Windle M, Windle RC. The onset and cross-temporal patterning of sexual intercourse in middle adolescence: Prospective relations with behavioral and emotional problems. Child Development. 1996; 67:327–343. [PubMed: 8625716]

United States Bureau of the Census.. Changes in median household income: 1969 to 1996. Washington, D.C: Author; 1998.

Warner LA, Kessler RC, Hughes M, Anthony JC, Nelson CB. Prevalence and correlates of drug use and dependence in the United States: Results from the National Comorbidity Survey. Archives of General Psychiatry. 1995; 52:219–229. [PubMed: 7872850]

Way N, Stauber HY, Nakkula MJ, London P. Depression and substance use in two divergent high school cultures: A quantitative and qualitative analysis. Journal of Youth and Adolescence. 1994; 23:331–357.

White RW. Motivation reconsidered: The concept of competence. Psychological Review. 1959; 66:297–333. [PubMed: 13844397]

Williams C, Epstein JA, Botvin GJ, Schinke SP, Diaz T. Psychosocial determinants of alcohol use among minority youth living in public housing developments. Developmental and Behavioral Pediatrics. 1998; 19:145–154.

Wills T, Vaccaro D, McNamara G. The role of life events, family support, and competence in adolescent substance use: A test of vulnerability and protective factors. American Journal of Community Psychology. 1992; 20:349–374. [PubMed: 1415032]

Windle M. A longitudinal study of antisocial behaviors in early adolescence as predictors of late adolescent substance use: Gender and ethnic group differences. Journal of Abnormal Psychology. 1990; 99:86–91. [PubMed: 2307771]

Windle M. A longitudinal study of stress-buffering for adolescent problem behaviors. Developmenal Psychology. 1992; 28:522–530.

Windle M, Barnes GM. Similarities and differences in correlates of alcohol consumption and problem behaviors among male and female adolescents. International Journal of the Addictions. 1988; 23:707–728. [PubMed: 3192339]

Winters KC, Wellar CL, Meland JA. Extent of drug abuse among juvenile offenders. Journal of Drug Issues. 1993; 23:515–524.

Wolfe JL, Fodor IG. The poverty of privilege: Therapy with women of the "upper classes. Women & Therapy. 1996; 18:73–89.

Yoshikawa H. Prevention as cumulative protection: Effects of early family support and education on chronic delinquency and its risks. Psychological Bulletin. 1994; 115:28–54. [PubMed: 8310099]

Zigler, EF.; Kagan, SL.; Hall, NW., editors. Children, families, and government: Preparing for the 21st century. New York: Cambridge University Press; 1996.

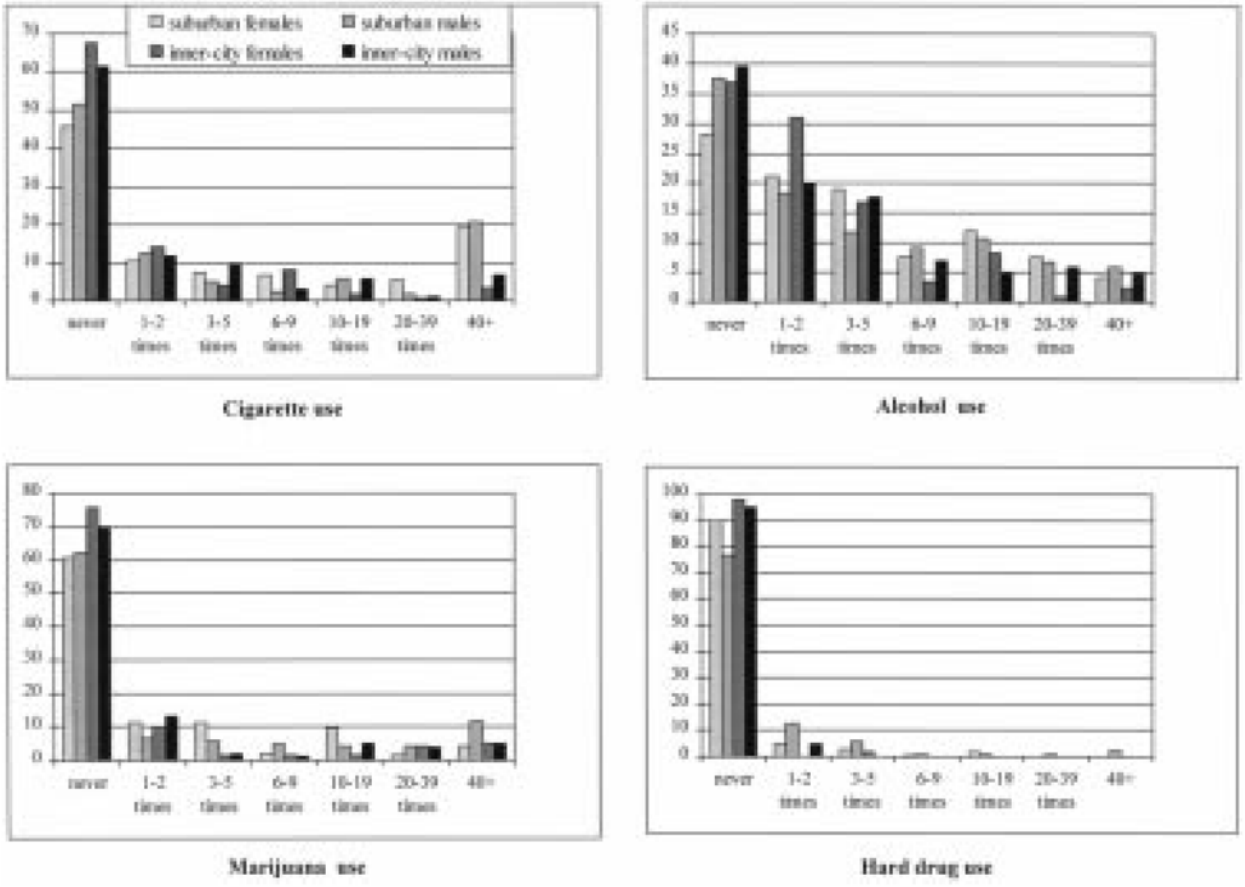

Figure 1.
Use of individual substances in the preceding year: percentage of students by frequency categories.

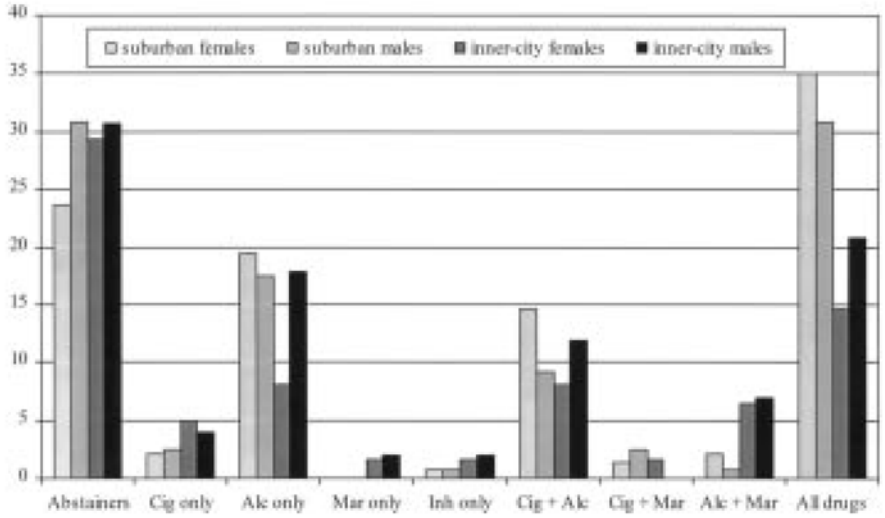

Figure 2.
Use of different combinations of substances: percentage of students by frequency categories. Cig, cigarettes; Alc, alcohol; Mar, marijuana; Inh, inhalants.

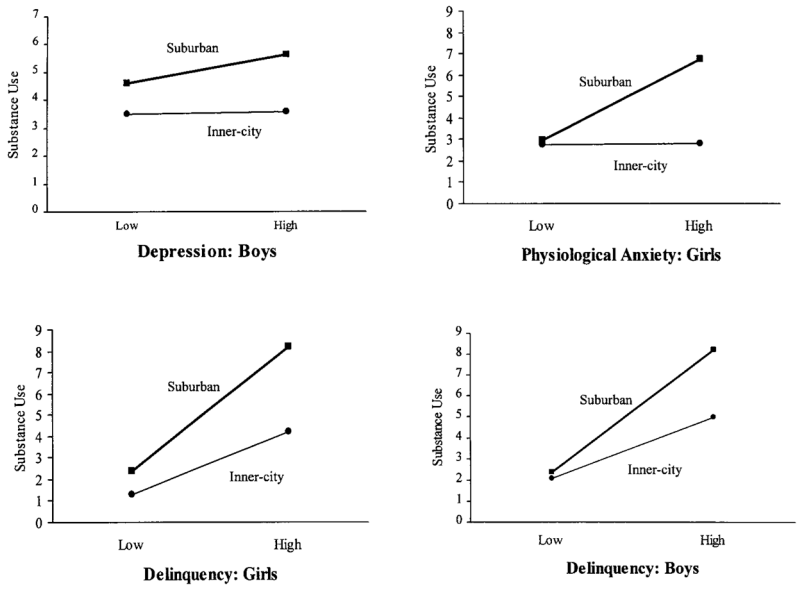

Figure 3.
Contextual differences in correlates of substance use: links with symptom indices in the suburban and inner-city school.

Table 1

Means and standard deviations of all variables

	Suburban				Inner-City					
	Females		Males		Females		Males			
	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	F_s[a]	F_g[a]
Substance use	5.03	5.19	5.12	5.80	2.77	4.07	3.54	4.51	17.65***	.88
Age	15.85	.48	16.07	.52	16.10	.67	16.36	.84	20.78***	17.70***
Depression	12.48	8.22	9.74	5.96	11.68	7.60	8.83	5.93	1.73	18.54***
Physiological anxiety	4.24	2.27	3.32	2.16	3.84	2.06	2.55	2.08	8.90**	31.87***
Worry	5.64	3.14	3.97	3.14	5.13	2.83	3.85	2.50	1.41	30.16***
Social anxiety	2.83	2.00	2.87	1.88	2.65	1.91	2.41	1.83	3.39‡	.33
Total anxiety	12.72	6.12	10.16	6.01	11.62	5.58	8.81	5.50	5.30*	25.44***
Delinquency	11.52	10.34	18.49	14.74	13.20	9.89	18.92	13.72	.90	32.57***
Liked least	.01	1.02	−.03	.89	−.05	.94	.07	1.01	.05	.22
Liked most	.04	.98	−.04	.95	.14	1.03	−.16	.88	.02	4.56*
Teacher-rated problems	28.98	1.68	29.25	1.53	30.12	2.43	31.21	2.62	66.72***	12.68***
Teacher-rated competence	31.02	2.14	30.72	1.93	29.79	2.80	28.98	2.71	45.09***	6.17**
Grades	10.11	1.00	9.95	.92	10.21	.96	9.99	.97	.51	4.38*
Days absent from school	5.95	6.10	4.90	3.49	3.35	3.82	2.93	3.88	27.91***	2.88

Note: Gender × School interaction terms were not significant with one exception: teacher-rated adjustment problems (F = 4.58*).

[a] g, gender; s, school.

‡ $p < .06$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 2

Self-reported problems among students in this study as compared to published norms: Substance use, depressive symptoms, and anxiety symptoms

	Norms for Males and Females[a]	Suburban Females	Inner-Females City	Suburban Males	Inner-City Males
Substance Use (%)					
Cigarettes	72	54	34	49	39
Alcohol	61	72	64	63	61
Marijuana	34	40	25	38	30
Any illicit drug	38	46	26	59	33

	Norms for Females	Suburban Females	Inner-City Females	Norms for Males	Suburban Males	Inner-City Males
Depression						
Clinical cutoff	19[b]			24		
Above cutoff (%)	7[b]	22	18	7	5	1
Total anxiety						
Clinical cutoff	17[c]			14		
Above cutoff (%)	17[c]	22	17	17	26	18

[a] Normative data on substance use are from the Monitoring the Future Study (Johnston, O'Malley, & Bachman, 1998) and are based on a national sample of 10th graders during 1996; values for males and females are presented together. All substance-use values refer to the percentage of students who used the substance at least once over the past year.

[b] Normative data on depressive symptoms are based on Children's Depression Inventory values (Kovacs, 1992) for boys and girls (13–17 years).

[c] Norms for total anxiety symptoms correspond to Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1985) values for boys and for girls (16 years).

Table 3

Correlation matrix of all variables: Girls and boys from the suburban school

	1	2	3	4	5	6	7	8	9	10	11	12
1. Substance use												
2. Age	.09											
	.17†											
3. Depression	.29***	−.08										
	.21*	−.00										
4. Physiological anxiety	.40***	−.03	.71***									
	.14	.06	.60***									
5. Worry	.09	−.07	.53***	.50***								
	−.14	.02	.41***	.55***								
6. Social anxiety	.24**	.04	.72***	.50***	.54***							
	−.02	.10	.58***	.56***	.52***							
7. Delinquency	.64***	−.07	.45***	.45***	.21*	.39***						
	.55***	.22*	.27**	.23*	−.07	.18†						
8. Liked least	.27***	−.07	.07	.13	.07	.16†	.27***					
	.10	.07	.16†	.14	.20*	.23†	.10					
9. Liked most	.12	.11	.08	−.00	.07	.09	.11	−.24**				
	.25**	−.03	.03	.07	.02	−.05	.02	−.31***				
10. Grades	−.42***	−.21*	−.17*	−.20*	.02	−.18*	−.44***	−.16†	−.07			
	−.44***	−.20*	−.14	−.13	.01	−.02	−.39***	−.16†	−.08			
11. Days absent	.26**	.14†	.09	.19*	.08	.17*	.25**	.21*	.12	−.40***		
	.06	.03	.02	−.05	−.03	.03	.06	.10	−.11	−.20*		
12. Teacher-rated problems	.34***	.04	.26**	.20*	.06	.23**	.36***	.34***	−.10	−.46***	.14	
	.25**	.24*	.01	−.03	−.01	−.07	.28**	.22*	−.06	−.35***	.05	
13. Teacher-rated competence	−.32***	−.01	−.24**	−.10	.03	−.18*	−.24**	−.24**	.13	.40***	−.11	−.80***

	1	2	3	4	5	6	7	8	9	10	11	12
	−.00	−.04	−.03	.02	.04	.09	−.12	−.20*	.18†	.16†	−.05	−.77***

Note: Correlations for females are listed in the top row with those for males underneath.

$^{\dagger}p < .10$.

$^{*}p < .05$.

$^{**}p < .01$.

$^{***}p < .001$.

Table 4

Correlation matrix of all variables: Girls and boys from the inner-city school

	1	2	3	4	5	6	7	8	9	10	11	12
1. Substance use												
2. Age	.06											
	.15											
3. Depression	.28**	.26**										
	.01	.18†										
4. Physiological anxiety	.05	−.00	.46***									
	.04	.11	.65***									
5. Worry	.07	.13	.52***	.44***								
	−.22*	.07	.52***	.58***								
6. Social anxiety	.13	.17†	.64***	.41***	.63***							
	.07	.09	.69***	.70***	.55***							
7. Delinquency	.44***	.07	.35***	.34***	−.01	.08						
	.30**	.16	.53***	.42***	.18†	.37***						
8. Liked least	.03	−.04	.05	−.12	.08	.08	.07					
	−.03	.01	.04	.05	−.04	−.09	−.08					
9. Liked most	.14	−.03	−.04	.13	−.02	−.03	.03	−.25**				
	.06	−.15	−.17†	−.03	−.13	−.09	−.05	−.24*				
10. Grades	−.28**	−.28**	−.19*	−.10	.04	−.09	−.40***	−.07	−.05			
	−.37***	−.42***	−.17	−.05	−.05	−.16	−.20†	.04	.08			
11. Days absent	.27**	.27**	.17†	.11	.06	.22*	.31***	.03	−.04	−.53***		
	.36***	.44***	−.05	−.02	−.17	−.11	.13	−.02	.05	−.47***		
12. Teacher-rated problems	.35***	.13	.19*	−.08	−.02	.07	.32***	.25**	−.04	−.59***	.32***	
	.22*	.30**	.16	.04	.06	.04	.29**	.21*	−.21*	−.62***	.34***	
13. Teacher-rated competence	−.31***	−.10	−.15†	.08	.00	−.03	−.24**	−.09	.13	.59***	−.26**	−.79***
	−.18	−.29**	−.07	.09	−.07	−.02	−.15	−.13	.19†	.62***	−.29**	−.71***

Note: Correlations for females are listed in the top row with those for males underneath.

† $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5

Hierarchical regression analysis predicting substance use from symptom indices

	Females			Males		
Predictors	**Step**	**β**	**ΔR^2**	**Step**	**β**	**ΔR^2**
Demographics						
School	1	2.09	.06***	1	1.83	.02†
Minority ethnicity	2	−.94	.01	2	−1.38	.01
Age	3	.27	.00	3	.78	.02*
Internalizing symptoms						
Depression	4	.10	.09***	4	−.20	.01
Physiological Anxiety	5	−.32	.02[a]	5	.13	.00
Worry	6	.06	.01†	6	−.55	.07***
Social Anxiety	7	.00	.00	7	.52	.00
Externalizing symptom						
Delinquency	8	.18	.20***	8	.12	.14***
Interaction terms						
School × Social Anxiety	9	.07	.00	9	−1.02	.00
School × Delinquency	10	.13	.02**	10	.08	.02*
School × Physiological Anxiety	11	.81	.01*	11	.12	.01
School × Worry	12	−.20	.00	12	.31	.01
School × Depression	13	−.13	.00	13	.34	.02*
Total			.42			.33

Note: As recommended by Aiken and West (1991), interaction terms in these analyses involve centered variables, and unstandardized regression coefficients are reported because standardized coefficients are inappropriate with interaction terms.

[a]This effect seems due to a suppressor variable, as suggested by the negative valence of the regression coefficient; zero-order correlations involving the variables concerned were positive in direction.

†$p < .10$.

*$p < .05$.

**$p < .01$.

*** $p < .001$. among both females and males, and grades were inversely related to males' substance use.

Table 6

Hierarchical regression analysis predicting substance use from social competence indices

	Females			Males		
Predictors	**Step**	**β**	**ΔR^2**	**Step**	**β**	**ΔR^2**
Demographics						
School	1	1.34	.06***	1	1.30	.03*
Minority ethnicity	2	−1.50	.01†	2	−.81	.00
Age	3	−.16	.00	3	.20	.02*
Peers						
Rejection	4	.05	.03**	4	−.60	.00
Acceptance	5	.57	.02*	5	.41	.05**
Teacher ratings						
Problem behaviors	6	.29	.07***	6	.23	.03**
Classroom competence	7	−.23	.01†	7	.12	.01
Academic record						
Grades	8	.10	.04***	8	−1.19	.08[a]
Days absent from school	9	.23	.01	9	.18	.00
Interaction terms (not significant)	10	—	.03	10	—	.03
Total			.28			.26

Note: As recommended by Aiken and West (1991), interaction terms in these analyses involve centered variables, and unstandardized regression coefficients are reported because standardized coefficients are inappropriate with interaction terms.

[a]This effect seems due to a suppressor variable, as suggested by the negative valence of the regression coefficient; zero-order correlations between grades and drug use were positive in direction.

†$p < .10$.

*$p < .05$.

**$p < .01$.

***$p < .001$.