

A Social Stress Model of Substance Abuse

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The social stress model provides a framework for detecting protective factors that may contribute to adolescents' resiliency when confronted with compelling influences to engage in substance abuse. Parameters of the model were tested in 2 urban high school samples ($N = 124$) of Black (78%), White (16%), and Hispanic (6%) adolescents aged 12-14 years. Pretest and posttest measures, designed to detect the relative influence of stress, social networks, social competencies, and community resources on levels of students' usage, were completed at the beginning and end of the school year. The parameters of the model, estimated using LISREL7, indicated that the pathway from family characteristics to usage and from assertion to usage were significant. The paths from the remaining hypothesized variables were not significant. Implications for the design of prevention programs that facilitate youths' resiliency are discussed.

The widespread use of illegal drugs among our nation's middle-class youth is declining (Johnston, O'Malley, & Bachman, 1989). The results of national substance use surveys are indicating a new trend, which carries a message of hope for the more educated and affluent adolescents. Relatively privileged American youth are beginning to turn away from the use of illegal drugs. For example, the use of marijuana and cocaine among high school seniors has decreased by 35% and 49%, respectively, in the past 9 years (Johnston et al., 1989). Although no specific treatment or prevention initiatives can be tied to this decrease in drug use among middle-class youth, there are several possible reasons for this trend. Throughout the 1980s American youth have become more interested in healthier life-styles and have greater concerns about the ingestion of all sorts of harmful substances. In addition, youth are increasingly returning to traditional values, as witnessed by their more conservative politics, increased interest in consumer goods, and greater willingness to make it through traditional channels of business and the professions. Finally, the drug prevention programs that most middle-class youth have been exposed to may be having a positive effect.

Despite the promising trends mentioned above, lower socioeconomic status (SES) and minority youth are experiencing a dangerous increase in drug abuse, dealing, and violence (Lamar, 1988). As substance abuse increasingly becomes an urban problem, we face an almost overwhelming challenge in our prevention efforts. Meeting this challenge demands a thorough

understanding of the ecological context in which the drug abuse is occurring.

Urban youth live in the midst of a profound cultural and spiritual crisis with features and dimensions that only recently have begun to be discussed (Bulhan, 1985). These influences deserve greater acknowledgment and elaboration in our conceptualizations of substance abuse (Amuleru-Marshall, in press). The majority of urban youth are beset by a variety of socioeconomic disadvantages. For example, more than 80% of Black youth live in families below the federal poverty level, and approximately 40% are unemployed (Lamar, 1988). Inner-city schools are often lacking in fundamental resources, and the dropout rate among urban Black and Hispanic youth approaches 50%. Many of these young people find themselves confronted by life options of gang membership, crime, violence, pregnancy, drug use, and drug distribution, all of which are more feasible in their culture of disempowerment (Rhodes & Jason, 1988).

When one expands the conceptual framework to consider the contingencies and norms of urban settings, behaviors that once appeared pathogenic often appear quite functional. For example, although drug dealing and gang activity are unequivocally delinquent behaviors, they offer extremely powerful contingencies (e.g., status, money, independence, and mobility) to youth residing in impoverished neighborhoods. Many urban adolescents, caught up in the drug culture, are enticed by the large profits associated with the trade. In New York City, for example, an aggressive teenager can make as much as \$3,000 a day. There are major consequences to this involvement in the drug culture. Over the past 5 years, juvenile drug arrests more than tripled in many of the nation's largest cities. There has also been an alarming escalation in violent and homicidal episodes, which are clearly driven by the proliferation of drug abuse in the inner city. These increases in adolescent drug arrests and violence indirectly indicate that the number of urban young people who are being inducted into drug use is increasing. Many of the clients of the adolescent crack dealers are themselves minors and, with a vial of crack available for \$3 to \$5, there is easy access to a rapid high and dangerous addiction.

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Given these disturbing trends in our inner cities and the powerful incentives to join the drug culture, how is society to prevent substance abuse among urban youth? Approximate solutions may emerge through observing urban youth who choose not to be involved in the drug culture, despite the significant financial and social rewards. This focus on *stress resilient* or *invulnerable* youth appreciates the fact that many urban youth remain prosocial in the face of conditions that place taxing demands on them and that, at the same time, predispose many of their peers to the development of problems (Felner, Gillespie, & Smith, 1985; Garnezy & Masten, 1986). By studying how these resilient children and their experiences differ from those with similar high-risk status (resulting from environmental or behavioral backgrounds) who have problems, we may be able to identify important prevention factors. For example, one factor that has received a great deal of attention and empirical support as a stress moderator for adolescents is family support (Cowen & Work, 1988; Werner & Smith, 1982). Family systemic functioning and parental support, as perceived by the adolescent, appear to serve critical buffering functions with respect to adolescent substance abuse (Barrett, Simpson, & Lehman, 1988; Huba, Wingard, & Bentler, 1980).

Unfortunately, most prevention efforts have not sufficiently incorporated such findings and have been largely unsuccessful with urban, minority youth (Felner & Felner, 1990). Many current prevention programs are based on explanatory models that emphasize individual personality and coping variables and the ways that these factors interact to contribute to substance abuse. These models focus on slightly different presumed causes of drug abuse, although most are consistent in viewing the problem as a deficit in the potential user (Botvin & Wills, 1985; Pentz, 1985). A concentration on skills deficits has led to the development of standardized, person-oriented skills programs that can be implemented within classrooms. Although this focus on individual skills training has facilitated dissemination and evaluation, the approach does have limitations. It pulls our focus away from the crucial contributing role of the environment as well as the transactions between the youth and the environment. This framework constrains us to view all troublesome behaviors and consequences that we confront as resulting from a deficit in the person rather than one possible response that any healthy, adequately functioning individual might have to the disordered or "developmentally hazardous environmental circumstances" he or she confronts (Felner & Felner, 1990).

Beyond these considerations, many of the current skills-based programs that are being implemented in the inner city were originally designed for middle-class White youth and, as such, are replete with middle-class values and biases. Although the need for culturally specific approaches to effective intervention has been acknowledged for some time, and indeed, some curricula have been adapted for the recipients, the issue has not been given the consistent, serious scholarship it deserves. Not enough attention has been given to the search for effective models of prevention and treatment of substance abuse disorders among a heterogeneous mix of culturally different people (Amuleru-Marshall, in press).

Approximate preventive interventions will most likely emerge from theory-driven, culturally sensitive conceptual models. Such models enable researchers to determine which

hypothesized factors have more salience than others in predicting resiliency and what their relation is to each other. This information can, in turn, guide the development of a consistent theoretical foundation and effective prevention programs. In the following sections, the social stress model will be presented as a framework for understanding adolescent substance abuse and related resiliency factors. The model integrates the emphasis on individual and family systemic variables (Bandura, 1977; Jessor & Jessor, 1977; Kandel, 1980) with the recent research on competence and coping (Wills & Shiffman, 1985). Additionally, in contrast to most theoretical approaches, the social stress model seeks to explicitly address the broader social variables that influence adolescent behavior. From this perspective, adolescent drug usage is viewed as the long-term outcome of multiple experiences with significant others and social systems from birth through adolescence.

According to the social stress model, adolescents initiate substance use as a means of coping with a variety of stressors and influences that may arise from within the family, the school, the peer group, or the community. Adolescents will be more resilient and, as such, less likely to engage in problematic early usage as a means of coping with these stressors if they are members of prosocial, supportive social networks. In addition the risk for abuse will be reduced if youth have developed adequate social competencies to offset the stressors of adolescence and pressures to use drugs and if they have sufficient community resources, role models, and opportunities. Alternately, if the process of developing positive attachments has been interrupted by uncaring or inconsistent parents or teachers, if external pressures exceed the youngsters' ability to cope effectively, or if the school and community offer few resources and models for success, adolescents may be more likely to turn to drugs. Although we are focusing on the etiology and maintenance of substance abuse among children and adolescents, this general framework can be extended to additional problem behaviors, such as delinquency or other excessive risk-taking behaviors. These behaviors can also be viewed as hazardous strategies for coping with the stressors of youth.

Similar to Albee's (1982) conceptualization of psychopathology, the risk for substance abuse can be conceived as a fractional equation with stress in the numerator and positive attachments, coping skills, and community resources in the denominator (see Figure 1).

According to this model, the likelihood of an adolescent engaging in drug usage is a function of the stress level and the extent to which it is offset by stress moderators, social networks, social competencies, and resources. The variables of the denominator are viewed as transacting with each other to buffer the impact of stress (Sameroff, 1987). For example, consistent and caring parents and teachers may lead to the acquisition of appropriate social competencies and may facilitate the development of hardy, resilient youth. Hardy youth interpret threats as challenges, view their environment and stressors as within their control or influence, and have a sense of personal commitment. Such youth perceive difficulties as less threatening and cope with stress more effectively than other youth (Kobasa, 1979). Similarly, healthy developmental functioning and positive relations with parents have been shown to be contributing factors in making some high-risk youth more resilient and skilled at

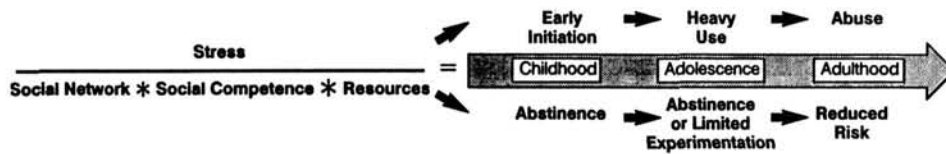


Figure 1. Social stress model of substance abuse.

handling the deleterious effects of stress (Cowen & Work, 1988; Werner & Smith, 1982). Finally, the ways in which one interprets and copes with stress may influence the ability to access resources and select appropriate models of success (Lazarus & Folkman, 1984).

Depending on the relative balance of the equation, youth may either turn to early drug use as a means of coping with stress or choose to avoid the pressures to engage in substance use and other high-risk behaviors. Some children may engage in drug use to reduce stress arising from a lack of support and pride in one's family, difficulties with peers or at school, or lack of family and community resources. The use of drugs under such circumstances may temporarily alleviate stress. In fact, preliminary studies on adolescents have provided some support for this model by showing decreases in anxiety or depression following drug use, at least for drug use assessed over short-term periods of 6 months or less (Aneshensel & Huba, 1983). If initial experimentation leads to more regular usage, however, there are increases rather than decreases in stress over the long term. As a transactional perspective would suggest, early regular use can contribute to increased personal and academic problems, which generate elevated levels of stress. This, in turn, can lead to increased usage as a means of coping. Alternately, youth who are experiencing lower levels of stress, or who have the networks, competencies, and resources to effectively resist usage, may be less likely to initiate usage in childhood and early adolescence. These youth may use substances later in adolescence as a function of social pressures and experimentation with life-styles. As mentioned earlier, middle-class youth are currently feeling fewer social pressures to use drugs, with a concomitant reduction in this transitional usage. Nonetheless, this later initiation is typically associated with more limited patterns of usage and a reduced risk for later serious abuse (Robins & Przybeck, 1985).

The purpose of our study was to test some of the parameters of the social stress model of substance abuse. Because models of urban adolescent drug use are still in the early stages of development and because this study included neither a longitudinal design nor a comprehensive assessment of all relevant variables, it represents a preliminary investigation of the social stress model and is considered an exploratory rather than a truly confirmatory examination of the model. The findings of this analysis should lay the groundwork for a more extensive test of the model in the future.

In an effort to study those factors that buffer youth against urban stressors, a relatively homogeneous sample of youth was included. As such, the effects of those factors common to all of the urban youth (e.g., school conditions, environmental stress, SES) on levels of drug use were not expected. Instead, it was predicted that usage levels would be affected by factors that

may be more variable within a homogeneous environment (i.e., family environment, self-esteem, assertiveness, locus of control, and attitudes toward drugs). By ascertaining those factors that differentiate levels of substance usage among this homogeneous sample, a further step can be taken toward a more comprehensive risk model. In addition, the identification of resilience factors has direct implications for the actual designing of preventive interventions.

Method

Setting

The study was conducted in two urban high schools, one school (School 1) was approximately 7 miles west of downtown Chicago, and the other school (School 2) was located approximately 4 miles west of downtown Chicago. The schools, which are both located in Cook County, are closely matched with respect to size and racial composition. School 1 encompasses 7 Chicago districts, and of the 2,340 students attending the school, approximately 71% are Black, 22% are White, and 7% are Hispanic. School 2 encompasses 4 Chicago districts, and of the 2,580 students attending, 84% are Black, 11% are White, and 5% are Hispanic.

Participants

The participants in both schools were freshman students taking required health classes. The three freshman health classes in School 1 consisted of 72 students, and the three freshman health classes in School 2 consisted of 81 students. There were no significant differences in the racial composition of the group from School 1 (84% Black, 9% White, 7% Hispanic) and School 2 (91% Black, 5% White, 4% Hispanic), $\chi^2(2) = .04$. There were no significant age differences ($M_s = 14.7$ vs. 14.2 years), $t(124) = .19$, or sex differences (School 1: 53% girls, 47% boys; School 2: 59% girls, 41% boys), $\chi^2(1) = .01$, between participants in Schools 1 and 2. From this sample, the data of 124 students (62 from School 1 and 62 from School 2) were randomly selected to be included in the study. The tables of Cohen and Cohen (1983) were used to estimate power, assuming a moderate effect size of .25 and an alpha level of .05 (two-tailed). Using these students as the unit of analysis, the power of a univariate test is $> .60$. Even with the estimated 10% attrition, the sample size provided sufficient power for the statistical analyses described below.

Measures

Pretests at the beginning of the academic year and posttests at the end of the academic year assessed students' substance usage; attitudes; cognitive and behavioral skills; perceived family, peer, and school support; SES; and perceived stress. Posttest measures assessed the stability of students' substance usage over time. All of the measures were scored in such a way that the higher the score, the higher the presumed risk for substance abuse.

A substance abuse inventory, designed by Botvin, Baker, Resnick,

Filazzola, and Botvin, 1984, was used in the evaluation. The inventory contained scales that were designed to assess student substance usage, attitudes about substances, and SES. In addition, the inventory contained several different scales designed to assess a number of personality variables that are frequently the focus of prevention programs, (e.g., assertiveness, locus of control, self-esteem). The substance knowledge, attitude, and usage scales were designed by Botvin et al. The personality and SES scales were derived from standardized measures (described below). The test-retest reliability of this measure, when tested over an 8-month period, ranged from .66 to .89 (Botvin et al., 1984), the substance attitude scale was used to assess cigarette, alcohol, and marijuana usage. The scale included 28 questions concerning tobacco, alcohol, and marijuana usage. Students were asked to indicate if they had ever used the substance and to give the frequency and level of usage within the previous month, week, and day. The test-retest reliability of the scales, when tested over an 8-month period, was adequate: tobacco, $r(124) = .85, p < .01$; alcohol, $r(124) = .75, p < .01$; and marijuana, $r(124) = .87, p < .01$.

The substance attitude scales were used to assess students' tolerance and perceptions of substance usage. The scale consisted of 33 statements concerning cigarettes, alcohol, and marijuana. Students were asked to indicate on a 5-point scale their level of agreement. The test-retest reliability of this measure, when tested over an 8-month period, was .89 ($p < .001$).

SES was measured using a modified (16-item) version of Hollingshead (1975), adapted by Botvin et al. (1984). The scale contained questions concerning demographic factors (e.g., occupation, education, age, race, and family characteristic). The test-retest reliability of this measure, when tested over an 8-month period, was .66 ($p < .01$).

Assertiveness was measured using a shortened (20-item) version of the Assertion Inventory, adapted by Botvin et al. (1984). For each item on the scale, the respondent was requested to indicate (a) degree of discomfort or anxiety on a five-point scale that ranged from *none* (1) to *very much* (5); (b) the probability of displaying the behavior if actually presented with the situation on a 5-point scale ranging from *always* (1) to *never* (5); and (c) the situation in which he or she would like to be more assertive. The original scale contained 40 questions and had internal consistency correlations ranging from .87 for discomfort and .81 for response probability. Correlations with observer ratings were .47 (Gambrill & Richey, 1975).

Locus of control was measured by means of a shortened, 24-item version of the Nowicki and Strickland (1973) Locus of Control Scale for Children, adapted by Botvin et al. (1984). The scale consisted of first-person declarative statements to which children responded either *yes* or *no*. The internal consistency correlations of the original scale ranged from .68 to .81 for Grades 6–12; test-retest reliability correlations over a 10-month period ranged from .63 to .71; and correlations with similar tests were approximately .51 (Nowicki & Strickland, 1973).

Self-esteem was measured using the Rosenberg Self-Esteem scale (Rosenberg, 1979). The scale comprises 10 items rated on a 4-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. This scale has an alpha coefficient of .87.

The Family and School Environment Scale was adopted for this research from Spergle's Student Questionnaire (Spergle, 1986). Because this scale was originally designed to assess inner-city youth and because it has been used extensively in urban gang research, it was particularly appropriate for this study. Twenty items were included to assess family and school environment. The scale assessed levels of support, control, intactness, problems in the family, and general levels of satisfaction and support from the school. The test-retest reliability of this measure, when tested on 12-year-olds over a 3-month period, was .61 for the home scales, .65 for the school scales, and .74 overall. Correlation of the school items with the Metropolitan National Achievement Scale was .76, $p < .01$ (Shoemaker, 1980).

The Coddington Life Events Record for adolescents age 12 and older

(Coddington, 1972) was used to assess stress. The Life Events Record consists of a sample listing of events judged to be frequently experienced by children and adolescents. In this version of the scale, 40 events were listed, and respondents were requested to indicate which of the events had been experienced during the preceding 12 months and the number of times the events had been experienced. The validity of the scale has received support from a number of correlational studies documenting significant relations between life stress scores and indices of health and adjustment (Johnson, 1986; Tolor & Murphy, 1985).

Procedure

Pretest assessments. During the 4th week of school, the pretests were administered to 124 students. To enhance the validity of the traditional pretests, carbon monoxide samples were collected from the students using an ecolyzer. Given the high degree of variability associated with this test of adolescent smoking (Rhodes & Jason, 1987), the scores were not used as outcome data. Instead, it was hoped that the procedure would serve to attenuate self-report biases.

Posttest assessments. Approximately 8 months after the administration of the pretests, the posttest measures were administered. Carbon monoxide samples were again collected using an ecolyzer. The final sample included 51 of the original 62 School 1 students and 57 of the original 62 School 2 students. Comparisons with *t* tests of students who participated at the first data collection with only those who participated at both time points yielded no significant differences in their preintervention skills, knowledge, or usage measures. Thus the students who participated throughout the study were considered representative of the original sample.

Analysis. The parameters of the model were estimated using LISREL7 (Joreskog & Sorbom, 1988), a computer program for estimating and testing linear structural equation models. In addition to assessing the fit of the model to the data from the chi-square statistics, *t* statistics (provided by the program) for parameter estimates were examined to determine the relevance of individual hypothesized paths in the model.

Consistent with the social stress model, the factors in the observed social network variable (family characteristics), social competencies variables (self-esteem, assertiveness, attitudes, locus of control), and community resources variables (school characteristics and SES) were measured. The construct of stress was treated as a manifest variable; a direct one-to-one correspondence between the actual observed variable and the underlying construct was assumed. Substance usage (U) was considered as a latent construct, measured by the observed cigarette, alcohol, and marijuana usage variables. The study examined the relative effect of stress, social network, social competencies, and community resources on levels of adolescent substance usage. In an effort to ascertain the stability of drug use over time, usage data was included in the model at the beginning and end of the school year.

Results

Prior to testing the hypothesized model, the matrix of inter-correlations among the variables assessed at pretest was examined. Consistent with prior research, the correlation between family support and the substance use indicators was significant, $r(124) = .86$. Similarly, the correlations between self-esteem, $r(124) = .49$, and assertiveness, $r(124) = .60$, were significant. The remaining skills-substance use correlations were modest and nonsignificant.

Although several of the paths in the hypothesized model were nonsignificant, the results of the test indicate that the model was significantly compatible with the data, $\chi^2(50, N =$

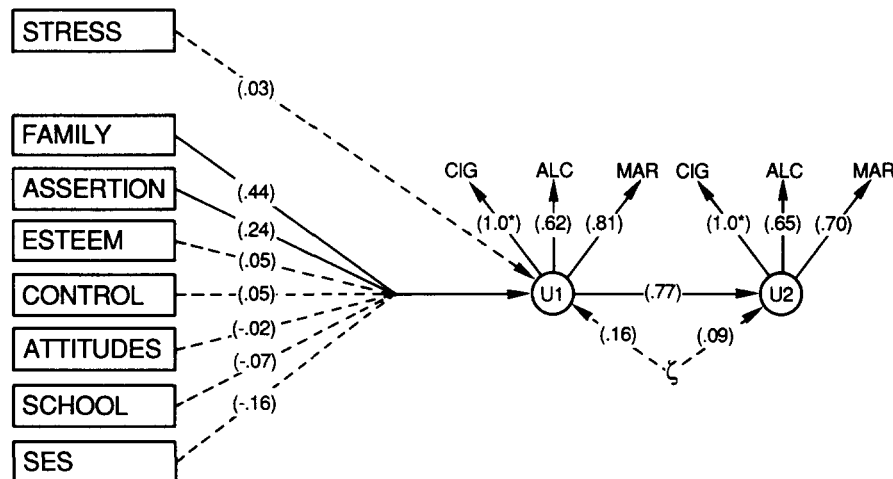


Figure 2. Standardized coefficients of model. (Values in parentheses represent standardized structural coefficients. The dotted arrows represent pathways that were included in the model but were not significant.)

124) = 65.34, $p > .05$ (Wagner, Compas, & Howell, 1988). The adjusted goodness-of-fit index was .85, and the structural equation that explained substance usage accounted for over one quarter of the total variance in this measure ($R = .29$).

The t tests for the hypothesized paths in the model indicated that the pathway from family to usage at pretest (U1) and from assertion to U1 were significant. The paths from the remaining hypothesized variables to U1 were not significant. The structural path coefficient from U1 to usage at posttest (U2) was .77, indicating stability in students' usage across time. This model is depicted in Figure 2, with solid arrows indicating significant pathways and dotted arrows reflecting paths included in the model that were nonsignificant.

Discussion

Our study examined a model to explain substance use among urban youth. On the basis of results of the model, the primary influences on drug use severity in this sample are poor family environment and low assertiveness. The data indicated that weak sibling and parental relationships, a lack of perceived support and encouragement, and a high degree of family problems are related to a higher level of usage. This conclusion is supported by research that has found that the level of conflict, organization and cohesion, and stress in an adolescent's family is significantly related to levels of substance use (Dishion & Loeber, 1983; Kumpfer, 1987). Given the relative importance of this family factor, a future confirmation of the model should include a more comprehensive assessment of family variables. Using responses from both the adolescent and the parent, and performing analyses at the level of their relationship, would afford the researcher the opportunity to examine systemic influences on behavioral outcomes.

Family variables, other than relationships with parents, may also be important determinants of substance use. Particularly with the study of lower SES cohorts, a broader conceptualization of *family* may be important. For example, approximately 30% of all teenage Black girls have at least one child, and over

75% of all lower income, Black, urban families, such as those included in this study, are headed by women (Ellwood, 1988; Wilson, 1987). In future studies, it may be important to assess students' relationships with grandparents, aunts, and neighbors, who frequently provide support and assistance with parenting. In fact, there is compelling evidence for the salience of these nonparent/nonpeer significant others for urban children and adolescents (Rapoport, 1987; Werner, 1986). Rutter and Giller (1983) suggested that these significant relationships be included in further delinquency research; they may serve protective functions, for example, as added or compensatory sources of support in face of high levels of stress. In a summary of her longitudinal study of vulnerability and resilience in children and adolescents, particularly as they pertained to delinquent outcomes, Werner (1986) concluded that the presence of close relationships with others besides parents, in fact, seemed to be a highly important protective factor. Future model verification can be strengthened through an increased specificity in both the range and buffering effects of family and compensatory-family variables. Multiple methods of assessing these relevant "family" variables should provide a useful basis from which to design culturally appropriate, family-based interventions.

The findings also indicated that assertiveness was related to substance use. According to the data, youth who are able to set limits with their peers and feel comfortable asserting their own opinions and needs are less likely to utilize substances. This is consistent with previous studies (Botvin & Wills, 1985) and suggests that youth with strong family support who have developed positive prosocial relations with parents and others may have the confidence and skills to assert prosocial values and resist the pressures to engage in heavy drug use (Hawkins & Weis, 1988; Huba et al., 1980). Future programs should place a strong emphasis on improving students' prosocial assertiveness skills. In addition, skills not included in this assessment (e.g., communication, decision making, and social competence) may be important determinants of adolescents' substance usage and should be included in future modeling.

The SES, school, and stress factors had no estimated direct effect on usage. Although previous studies have found that these factors are important predictors of substance use and other problem behaviors (Felner, Ginter, & Primavera, 1982), the lack of a significant relation to usage in this study was quite likely the result of the limited sampling range. That is, because all of the students attended similar schools and lived in similar communities, there were relatively small variances with respect to these sociocultural factors. Given that we were interested in resilience factors amid a homogeneous sample, this lack of covariation among the more global variables (e.g., SES, environmental stress, and school) was not surprising. Nonetheless, studies would be strengthened with a more comprehensive range of sociocultural factors and the use of a more sensitive stress instrument (Johnson, 1986). The Coddington Life Events Record (Coddington, 1972) has been criticized for providing only an overall measure of life change and making no distinction between positive and negative life changes, for providing a limited sampling range of events experienced by children and adolescents, and for failing to incorporate variation that may exist in individual appraisal of life events (Johnson, 1986).

Given the central role prescribed to stress in the model, future studies should provide a more culturally sensitive assessment of the stressors facing urban youth. As a field, stress research has been criticized in recent years for failing to consider the social and economic situations of the people who experienced the event (Avison & Turner, 1988). Pearlin (1989) has argued that the conceptualization and measurement of stressors should move away from the focus on particular events or chronic strains and should seek instead to observe and assess constellations of stressors over time, made up of both events and more enduring strains. Such stressors may transact with each other across contexts and roles: Gang membership may lead to drug dealing; drug dealing may lead to dropping out of school; school and behavioral strains may create family strains; and so on (Wheaton, in press). This perspective underscores the fact that life problems, whether in the form of events, enduring strains, or daily hassles, do not exist in isolation from other problems.

In addition to such refinements in construct validity, inferences can be strengthened if larger samples are included and if models are fitted to longitudinal rather than more concurrent data sets. Findings can also be strengthened through the use of multiple data-gathering techniques. Although self-reports are the most commonly used method for assessing drug use, there are several limitations associated with this technique (Rhodes & Jason, 1987). Most self-reports require respondents to supply a code, such as a birth date, to permit linkages between pretests and posttests as well as other sources of data. Unfortunately, researchers have consistently found that questionnaires in which there are identifiable markings result in lower reported substance use than completely anonymous questionnaires, presumably as a result of inhibitions (Malvin & Moskowitz, 1983). Given the biases and limitations associated with self-reports, convergent and triangulated assessments may be helpful. These would include an assessment approach that obtained multiple indicators of the focal variables (e.g., self-reports, parent or teacher/school personnel reports of the problem extent, and law enforcement indicators) as well as convergent variables of associated dysfunction (e.g., reductions in related high-risk behaviors, affective dysfunctions, social deviance, or academic dys-

functions; enhancements in self esteem, academic performance, or vocational functioning).

Overall, exploratory models, whether in the form of factor analyses, path analyses, or a combination of the two (e.g., LISREL, EQS) can never be confirmed through the results of a single study. The present model is statistically plausible for the present data and presumably for other sets of data. It is only through repeated demonstration of fit, with continued refinement and improvement of the data set and methodology, that a greater percentage of the variance in usage can be accounted for and the model can be accepted as fully adequate.

Our study provided supportive data for a more ecological model of adolescent substance abuse. The study provides support for the current notion that the family is the single most influential childhood factor in buffering the child and in shaping later adaptation (Kumpfer, 1987). Parents who model nonuse or socially appropriate use of alcohol and medications and who provide consistent support and supervision appear to have fewer children who become seriously involved in drugs.

Developmentally hazardous conditions within the inner city will, no doubt, continue to challenge our nation's youth. These conditions should remain a foremost target in the war against drugs. In the course of these battles, promising strategies may emerge when society focuses on those factors that buffer youth against pernicious environmental influences. The results of this study suggest that prevention programs should be developed that include the family and, within this context, focus on improving opportunities for youth to develop supportive parental and additional or compensatory prosocial relationships. It is within a supportive context, with concerned and consistent significant others, that youth can develop the confidence and skills to assert prosocial values and resist the pressures to engage in drug use and distribution (Hawkins & Weis, 1985). The American public is currently very much interested in solving the drug abuse problem. To the extent that this and other etiological models of substance abuse continue to be tested and refined, and the findings integrated into culturally sensitive, community-based initiatives, our nation may begin to achieve this goal.

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