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Purpose in Life, Cognitive Efficacy, and General Deviance as Determinants of Drug Abuse in Urban Black Youth

Lawrence M. Scheier
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ABSTRACT. Problem behavior theory has been a useful adjunct to explaining the etiology of adolescent drug use. However, the conceptual appropriateness of social-psychological theories of drug use with minority youth has rarely been tested empirically. In addition to normative developmental transitions associated with adolescence, minority youth may encounter sociopolitical and economic hardships that spawn despair, hopelessness, and personal anomie, which may independently engender drug use. Using cross-sectional data from a cohort of 8th grade, urban, black youth, we tested several latent-variable structural equation models which posited that general deviance would mediate the influence of cognitive efficacy (i.e., skills mastery and personal competence) and, separately, personal anomie. Models were psychometrically sound and accounted for large portions of variation. Results showed that the influence of hopelessness, loneliness, and suicidal thinking was entirely mediated by physical aggression, sensation-seeking, unsafe, and unconventional behavior.

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Personal competence had both direct and indirect influences on drug use. Findings underscore the continued primacy of deviance in predicting drug use for minority youth and the necessity of incorporating affective influences into current cognitive-behavioral intervention strategies. [Article copies available from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: getinfo@haworth.com]

Problem behavior theory (e.g., Jessor & Jessor, 1977) has played a central theoretical role in etiological models of adolescent substance use. Specifically, elements of the personality system (e.g., religiosity, rebelliousness, self-esteem), and proximal perceived environment (e.g., peer models for deviance) have been regarded as major determinants of adolescent substance use. In addition to research elucidating the social-psychological mechanisms that foster early adolescent substance use, a large body of evidence attests to the structure, integrity, and utility of conceptualizing a variety of different problem behaviors as a single syndrome (Donovan & Jessor, 1985; Donovan, Jessor, & Costa, 1988; McGee & Newcomb, 1992). By utilizing a variety of bivariate and multivariate statistical approaches, researchers have identified a common set of norm-violating or unconventional attitudes, behaviors, and activities (e.g., vandalism, truancy, precocious sex) that collectively define problem behavior.

Despite the congruence among research findings attesting to the collective strength of problem behaviors, many of the studies that have purported to test the Jessors' social-psychological model have examined these behaviors and attitudes in samples comprised mainly of white youth. As a result, the appropriateness of a social-psychological framework for explaining adolescent substance use with minority youth has not been confirmed empirically. This may be disadvantageous especially given the large representation of minority youth in urban settings, where increased exposure to drugs, anomie, and deteriorating social norms may promulgate entrance into substance use. Moreover, the onset of drug use and its persistent use in the face of mounting social and personal problems can have untoward negative effects including psychosocial dysfunction, disenfranchisement, and disruption of the acquisition of adult roles (Kandel, Davies, Karus, & Yamaguchi, 1986; Newcomb & Bentler, 1988). Clearly, prevention efforts that are rationally guided and that

can make significant headway with minority youth can facilitate the public health prevention agenda.

EMPIRICAL CLARIFICATION OF POTENTIAL RISK MECHANISMS FOR MINORITY YOUTH

To date, a large literature has examined risk and protective factors for adolescent drug use (for a review, see Hawkins, Catalano, & Miller, 1992). A consensus across these studies is that both intrapersonal and interpersonal influences help to determine vulnerability to substance use. In addition to the influence of intrapersonal (i.e., affective stress) and interpersonal (i.e., peer social influences) risk associated with normative adolescent development, minority youth may be susceptible to additional pressures stemming from their socioeconomic and cultural conditions (e.g., Hammond & Yung, 1993). High levels of acculturative stress, a lack of social and ethnic bonding, and a sense of despondency resulting from a poor outlook on their future can individually and collectively contribute to a pattern of general deviance that might include substance use.

Recently, findings from prevention trials with minority youth have reported lowered levels of substance use among youth exposed to a broad-spectrum cognitive-behavioral intervention (e.g., G. Botvin, Dusenbury, Baker, James-Ortiz, E. Botvin, & Kerner, 1992; Botvin, Dusenbury, Baker, James-Ortiz, & Kerner, 1989). Despite the promising findings from these early trials, etiology research has not clarified several important concerns. First, more research is needed that uncovers whether or not specific risk mechanisms that have been identified in predominantly white middle-class youth exert their influences in the same manner with minority populations. Given the added importance cultural and environmental determinants of substance use among minority youth (e.g., community disintegration may foster drug use), it is essential to include measures of stress and anomie into explanatory models of minority drug use.

Second, the distinction between attitudes (e.g., risk-taking or sensation-seeking) and behavior (e.g., aggression or risky and unsafe behaviors) may be artificially imposed. Attitudes and behaviors may be much more strongly enmeshed than previously con-

ceptualized (i.e., Bentler & Speckart, 1979; 1981), and their linkages need further clarification. In the current model, a dimension of general deviance is hypothesized to include elements of both attitudes (e.g., unconventionality and sensation-seeking) as well as behavior (both unsafe and physical aggression) and the conceptual adequacy of this dimension is tested using confirmatory factor analysis (CFA). Third, even within a social-psychological framework, too often influences on substance use have been conceptualized within a "direct-effects" approach. That is, risk factors are often juxtaposed to establish predictive prominence without considering the potential for reciprocal, mediational, or interactive relations.

Fourth, problem behavior theory specifically delineates personality risk factors that are constituent components of a cognitive enterprise with little consideration for affectively-mediated risk mechanisms that may play a large role in the etiology of drug use. Although it is quite possible that substance use is cognitively motivated, a number of researchers have demonstrated empirically the utility of considering affective systems as part of the framework for understanding substance use (e.g., Harlow, Newcomb, & Bentler, 1986; Labouvie, 1986a, b; Newcomb, Bentler, & Collins, 1986; Newcomb & Harlow, 1986). For instance, Newcomb and Harlow (1986) reported small but significant effects from meaninglessness to substance use, which led them to conclude that "by adolescence a pattern may have developed whereby many teenagers seek solace from alcohol, marijuana, and other drugs in order to relieve a sense of meaninglessness and lack of direction in life" (p. 574).

Kandel and her colleagues (1988; Kandel, Raveis, & Davies, 1991) have also shown that suicidal thinking and depression predict delinquency and drug use in adolescents. Minority, and urban black youth in particular, may have elevated levels of suicidal thinking, depression, and a sense of despondency spawned by deteriorating social and economic conditions. These conditions may contribute to the onset of drug use in youth lacking specific affective and cognitive coping skills. Moreover, despondency or lack of purpose in life may serve as a catalyst to many problem behaviors (e.g., aggression) or attitudes (e.g., sensation-seeking) that combine to stimulate substance use.

Finally, the absence of personal competency skills has often been

cited as a major cause of early delinquency and drug use (e.g., Botvin & Botvin, 1992; Dodge & Frame, 1982; Pandina, Labouvie, Johnson, & White, 1990). The development of cognitive skills is a major focus of the adolescent years and deficiencies in this area have been a noted characteristic of delinquent and drug-abusing youth. Cognitive skills refer to the motivational and strategic resources that youth rely upon to engage in problem-solving and decision-making for both academic tasks and interpersonal situations (e.g., Bandura, 1986). Enhancement and accentuation of these skills has been a major focus of school-based intervention programs as an effective deterrent against initiation to and continuation of adolescent drug use (e.g., G. Botvin, Baker, Dusenbury, Tortu, & E. Botvin, 1990). Among minority youth already beset with stressful social and economic conditions, the lack of personal competency may hinder formation of institutional ties that would serve to foster development of these skills.

IMPORTANCE OF THE CURRENT STUDY

Despite recent attempts to understand the etiology of drug use among inner-city, minority youth (Farrell, Danish, & Howard, 1992), few studies have examined precisely components of problem behavior theory and included measures of cognitive efficacy, affective stress, and personal anomie within a specified theoretical framework. In the current study we address many of the methodological and conceptual problems associated with past research by: (a) elaborating a model of minority drug use that relies on a wider array of affective and cognitive risk factors including purpose in life, suicidal ideation, personal anomie, self-esteem, decision-making and self-reinforcement skills, and multiple measures of general deviance; (b) determining the relative predictive efficacy of these psychosocial risk factors in predicting drug use; and (c) examining generative psychosocial risk mechanisms that specify a mediational role for general deviance, that is, deviance is distinct from but conceptually proximal to substance use as it actively filters the effects of anomie and developmental competence on substance use.

METHODS

Data Collection

The cross-sectional data was obtained from students attending three middle schools participating in a longitudinal school-based drug education intervention program. As part of the intervention study, all three schools were designated as experimental schools and were located in one of the five boroughs of New York City. Field staff had arranged for the additional data collection during a normally scheduled site visit for a pretest 7th grade data collection. School demographic characteristics matched those of the surrounding communities and reflected accurately both racial and economic parameters.

Students responded to the survey during a regularly scheduled classroom period. Teachers were present during data collection, however, students were assured of the confidentiality and anonymity of their responses. Staff personnel read a standardized set of protocols to the students regarding confidentiality, handling, and treatment of questionnaire data. No personal identification or tracking information was collected for the purposes of this one-time data collection.

Description of the Sample

The sample of black youth was 51% female. In describing their household living situation, 39% of the students reported they lived at home with both parents and 37% reported they lived with their mother. The next largest percent (13.3%) reported they lived with their mother and a stepfather, and the remaining percentages were broken down among 2% living with stepmother and father, 2% with their father only and 7.4% in some other condition. Underscoring the lower socioeconomic conditions of these youth, the largest percentage of students indicated they either did not eat lunch (41%) or received free lunch at school (40%), while the remaining students bought lunch outside of school (7.3%), brought lunch from home (5%), bought at a reduced price (3.6%), full price (2.9%), or went home to eat (0.5%). Mean self-reported grade point average for

these youth was 3.7 (SD = 0.6) on a five-point scale ranging from *mostly D's or lower* (1) to *mostly A's* (5), and average self-reported absenteeism was 3.0 (SD = 1.2) school days in a year.

HYPOTHESIZED STATISTICAL DIMENSIONS

From the original 18 observed measures (scales), a latent construct of General Deviance was reflected by four multi-item composite scales tapping delinquent attitudes and behaviors. Four items taken from the Kendall and Wilcox Inventory of Behavioral Self-Control (Kendall & Wilcox, 1979) tapped unconventional behavior (e.g., "I bother other students when they're trying to work"; $\alpha = .60$); five items taken from the Eysenck's Personality Inventory (Eysenck & Eysenck, 1975) tapped sensation-seeking (e.g., "I would do almost anything on a dare"; $\alpha = .73$); five items tapping frequency of [physically] aggressive behaviors (e.g., "picked a fight with someone"; $\alpha = .80$) and seven items tapping frequency of engaging in unsafe and risk-engendering behaviors (e.g., "hitch-hike or ride empty buses or trains"; $\alpha = .72$). Response formats for items comprising both conventional and risk-taking behaviors ranged from "*strongly disagree*" (1) to "*strongly agree*" (5), whereas the format for the frequency of unsafe behavior items ranged from "*never*" (1) to "*10 or more times*" (5) and the response format for the frequency of aggressive behavior items ranged from "*never*" (1) to "*more than 5 times*" (5).

Six items were used to reflect a latent construct of Polydrug Use. Four items tapped frequency of cigarette smoking, alcohol use, marijuana use, and inhalant use. A common stem was used (about how often [if ever] do you:), and response formats ranged from "*never*" (1) to "*more than once a day*" (9). Two additional items tapped intensity of alcohol ("drink until you get drunk") and marijuana use (e.g., "smoke marijuana or hashish until you get high or stoned").

Four multi-item indicators were used to reflect a latent construct of Personal Anomie. Five items were taken from the Revised UCLA Loneliness scale (Russell, Peplau, & Cutrona, 1980: e.g., "when I have a serious problem there is usually no one I can turn

to”; $\alpha = .74$); four items tapping future hope and life purpose ($\alpha = .53$) were taken two each from the Reasons for Living Inventory (Linehan, Goodstein, Nielsen, & Chiles, 1983: e.g., “I have future plans I am looking forward to carrying out”) with response formats ranging from “*this describes me always*” (1) to “*this never describes me*” (5); and the Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974: e.g., “I can look forward to more good times than bad times”) with response formats ranging from “*strongly agree*” (1) to “*strongly disagree*” (5); six items tapping existential purpose in life and meaning were taken from the Purpose in Life Scale (Crumbaugh & Maholick, 1964: e.g., “facing my daily life is difficult and unsatisfying”; $\alpha = .62$) with response formats ranging from “*strongly disagree*” (1) to “*strongly agree*” (5); and three items tapping suicidal ideation taken from the Life Purpose Questionnaire (Hablas & Hutzell, 1982) and Reasons for Living Inventory (e.g., “life is too beautiful and precious to end it,” “with regard to suicide, I never have given it a second thought,” and “I believe killing myself would not really accomplish or solve anything”). Response formats for the suicidal ideation items corresponded to the response formats for the purpose in life, hopelessness, and reasons for living items, which, to avoid response bias, were randomly inserted throughout the survey with the other scale items.¹ With the exception of the items tapping purpose in life, which were scored toward greater meaning and purpose, all of the remaining items were scored toward greater meaninglessness (anomie), hopelessness, and more suicidal ideation.

Four multi-item scales tapping personal competence and cognitive mastery ($\alpha = .79$), self-reinforcement ($\alpha = .75$), applied decision-making skills ($\alpha = .87$), and self-esteem ($\alpha = .86$) were used to reflect a latent construct of Cognitive Self-Efficacy. Five items from the Paulhus Spheres of Control (SOC) tapped cognitive mastery, personal efficacy, and competence (Paulhus, 1983; Paulhus & Christie, 1981). According to Paulhus and Christie, personal efficacy refers to control expectancy in interpersonal situations that is cognitively mediated (e.g., “when I make plans I am almost certain to make them work”). With the exception of one item (e.g., “I prefer games involving some luck over games requiring pure skill”), the remaining items were keyed toward internal control.

Five items from Heiby's (1983) 30-item Frequency of Self-Reinforcement Attitudes Questionnaire were used to form a composite scale tapping cognitive self-reinforcement (e.g., "I silently praise myself even when others do not praise me"). Heiby defined self-reinforcement as "the process of establishing and controlling overt and covert positive consequences of one's own behavior" (1983, p. 1304). Accordingly, individuals with low frequency of self-reinforcement will be characteristically low in self-confidence and self-esteem as part of their response set due primarily to the unpredictable nature of external sources of reinforcement.

Five items were used to form a scale assessing decision-making skills (Wills, 1985). These items tap direct action cognitive strategies (e.g., planning, evaluation, weighing options) individuals use when confronted with a problem (to improve performance: e.g., "I think about choices that exist before I take any action"). Finally, five items from Rosenberg's Self-Esteem Scale (Rosenberg, 1965) were used to form a composite tapping self-esteem and personal worth (e.g., "I feel that I have a number of good qualities"). Responses for all of the psychosocial items tapping cognitive efficacy ranged from "*strongly disagree*" (1) to "*strongly agree*" (5).

MODEL ANALYSIS STRATEGY

Using latent-variable structural equation modeling, a series of nested hierarchical path regression models were tested and contrasted statistically. In each model, a dimension of general deviance was hypothesized to mediate the influence of either personal anomie or cognitive efficacy on substance use. Statistical tests for mediation using both ANOVA and path regression techniques are outlined by Baron and Kenny (1986) and MacKinnon (1994). Prior to conducting the path regression portion of the analyses, a measurement model was conducted to test the statistical reliability of the hypothesized dimensions.

Overall, 18 composite scales were used to reflect 4 latent constructs including: General Deviance, Cognitive Efficacy, Personal Anomie, and Polydrug Use. Each latent construct was hypothesized a priori and items or scales were constrained to load on only one factor, thus mimicking simple structure. The model testing

procedure was conducted using the EQS statistical program (Bentler, 1989). Several criteria were used to evaluate statistically the overall model fit, including: (a) χ^2 to degree of freedom ratio (optimally less than 5.0); (b) p-value associated with the χ^2 ($p > .05$, indicating that there are no statistically significant discrepancies between the observed sample correlations and the estimated correlation matrix); (c) the Comparative Fit Index (CFI: a sample-size adjusted analogue to the Normed Fit Index [Bentler & Bonett, 1980] indicating the amount of covariation accounted for in the sample data by the hypothetical model [Bentler, 1990]); and the standardized root-mean-square-residual (RMSR), indicating the amount of residual covariation unaccounted for by the hypothesized model (or lack of fit). Benchmarks for this latter statistic are considered adequate if less than .05 and for the CFI are considered adequate approaching .90.

RESULTS

Summary descriptive statistics and gender differences for the observed psychosocial and drug use scales are presented in Table 1. A maximum-likelihood regression-based imputation procedure (Dixon, 1992) was used to maximize the sample available for analysis. Both pre- and post-imputed means are presented for comparison (extensive statistical analyses have demonstrated empirically that no disfigurement to the basic covariance patterns occurs with maximum likelihood data estimation [see for example, Rubin, 1987]).

Drug Use Patterns

Prevalences for drug use for the current sample were somewhat lower than rates typified in national and regional samples. Black youth in general have lower drug use rates than their same-aged white or Hispanic peers and this has been observed in both national and regional surveys (Johnston, O'Malley & Bachman, 1994; Oetting & Beauvais, 1990; and for New York State alcohol prevalences see, Barnes & Welte, 1986).

Using a dichotomous use/nonuse distinction for each of the four

TABLE 1. Summary Descriptive Statistics for Variables Used in the Model: Black Urban Eighth Grade Youth

Variables	N ^a	Before Imputation		After Imputation			Confidence Limits		Mean Gender Difference ^b
		Mean	St Dev.	Mean	St Dev.	St Error	Lower	Upper	
Cigarette frequency	415	1.484	1.356	1.489	1.354	0.004	1.485	1.494	-.02
Alcohol frequency	412	2.015	1.494	2.019	1.488	0.005	2.014	2.024	-.05
Drunkenness	414	1.188	0.859	1.184	0.847	0.002	1.182	1.185	-.03
Marijuana frequency	416	1.326	1.121	1.325	1.118	0.003	1.322	1.328	-.06
Being stoned (pot)	417	1.216	1.088	1.218	1.089	0.003	1.215	1.221	-.02
Inhalant frequency	417	1.111	0.748	1.112	0.749	0.001	1.111	1.113	.03
Grades	405	3.672	0.750	3.671	0.743	0.001	3.670	3.673	.13**
Conventional behavior	386	13.164 ^c	3.400	13.173	3.304	0.030	13.144	13.202	.08 ^m
Sensation-seeking	358	14.639	4.350	14.713	4.143	0.051	14.662	14.764	-.14**
Physical aggression	414	8.307	4.170	8.288	4.149	0.042	8.247	8.330	-.09 ^m
Unsafe behavior	413	12.930	5.068	12.921	5.043	0.062	12.860	12.982	-.21***
Self-reinforcement	397	19.710	3.627	19.654	3.582	0.033	19.621	19.686	.11*
Cognitive mastery (competence)	379	20.062	3.775	19.911	3.760	0.039	19.875	19.952	-.01
Self-esteem	349	20.022	4.269	19.892	4.103	0.049	19.844	19.942	.13*
Decision making skills	334	18.781	4.263	18.671	3.967	0.049	18.622	18.721	.10 ^m
Suicidal ideation	411	6.836	2.874	6.844	2.858	0.020	6.824	6.864	-.01
Life purpose (hopelessness)	410	5.830	2.234	5.859	2.236	0.012	5.845	5.869	-.03
Loneliness	412	9.865	3.744	9.886	3.734	0.034	9.851	9.920	.06
Purpose in life	409	20.022	4.733	20.015	4.712	0.055	19.960	20.069	.03

Note: ^a Sample size varies for preimputed data set, N = 416 for imputed data set.
^b A positive correlation indicates that females had the larger value.
^c Scales are prorated by the number of items inclusive. Scales with greater than 30% of the items missing are set to missing for imputation.
[* p ≤ .05, ** p ≤ .01, *** p ≤ .001, ^m = marginal (p < .10)]

drug categories, 21.4% of the youth reported they had smoked cigarettes (within a time framework covering the past year), 48.3% said they had drank beer or hard liquor, 12.3% reported they had smoked marijuana, and 3.6% reported they had sniffed glue or some other inhalant to get high.

Gender Differences in Mean Composites

There were no statistically significant mean gender differences on any of the drug use items. Among the psychosocial scales, there was a marginal trend for greater physical aggression among males ($M = 8.67$ males and $M = 7.91$ females; $t = 1.83$ [384], $p = .067$). Males reported greater levels of sensation-seeking ($M = 15.29$ males and $M = 14.07$ females; $t = 2.65$ [352], $p < .01$), and greater frequency of unsafe behaviors ($M = 13.92$ males and $M = 11.81$ females; $t = 4.35$ [405], $p < .001$). Females reported significantly higher grades ($M = 3.57$ males and $M = 3.77$ females; $t = -2.67$ [397], $p < .01$), a marginal trend for greater self-reported conventionality ($M = 12.87$ males and $M = 13.47$ females; $t = -1.72$ [380], $p = .08$), greater reported self-reinforcement ($M = 19.28$ males and $M = 20.08$ females; $t = -2.20$ [354], $p < .05$), greater reported self-esteem ($M = 19.44$ males and $M = 20.55$ females; $t = -2.41$ [299], $p < .05$), and a marginal trend for greater reported decision-making skills ($M = 18.33$ males and $M = 19.22$ females; $t = -1.90$ [328], $p = .06$). Overall, these differences were ever so slight (average proportion of variance accounted for by gender was 1%) and the small sample size prohibited robust parameter estimation using separate samples based on gender (Tanaka, 1987).

Results of the Confirmatory Measurement Model

Prior to conducting the theoretically driven path regression analyses, we conducted a confirmatory measurement model to test the adequacy of the hypothesized latent constructs. This analysis enabled us to determine whether we had conceptualized the hypothetical dimensions correctly (i.e., statistically reliable) and examine their error-free intercorrelations. Fit statistics for the CFA model (inclusive of all four latent factors) indicated an adequate fit,

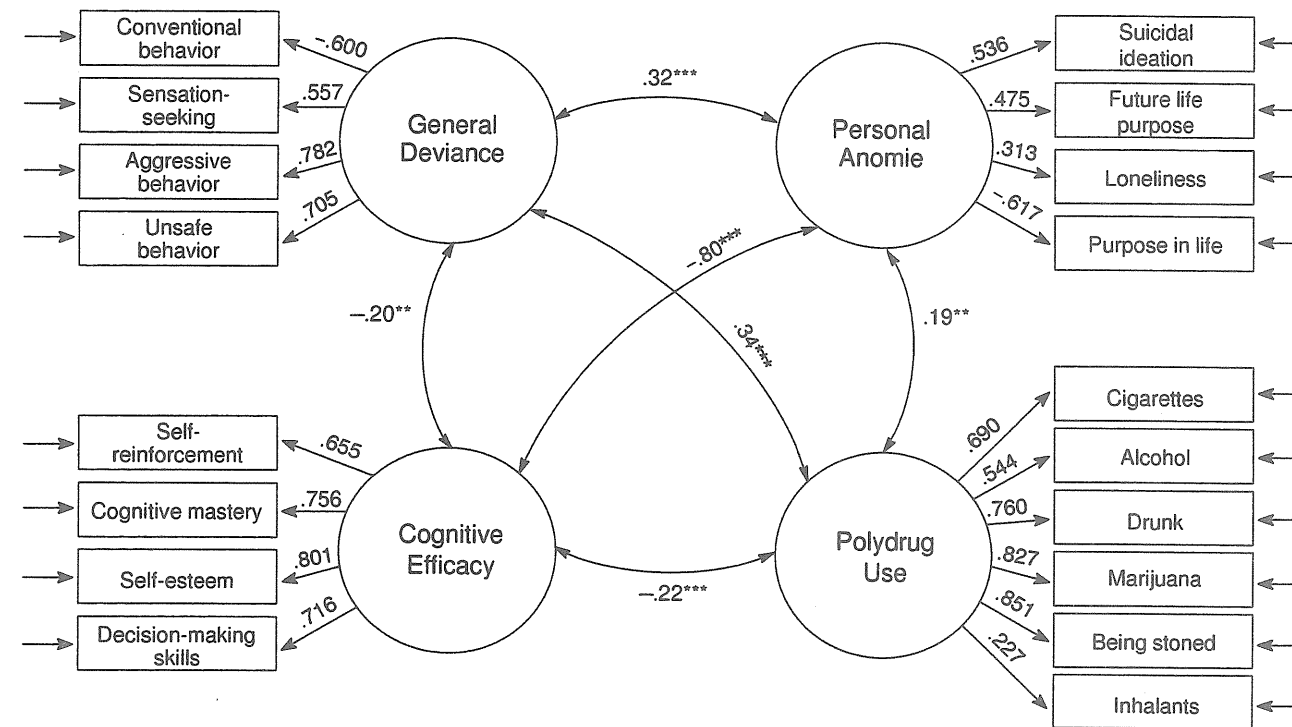
$\chi^2(129, N = 416) = 414.37, p < .001, CFI = .885, \chi^2/df = 3.21, RMSR = .04$. The CFI approaches the benchmark of .90 and indicates that almost 89% of the sample covariation is accounted for by the hypothesized model. Although the p-value is significant (and thus indicates that other hypothetical structures could be fit to the data), the small RMSR indicates that little covariation was left in the residual matrix and that the model is an extremely good approximation of the true sample covariances.

Several factors including the large size of the model (the numbers of freely estimated parameters result from the combined variances, covariances, factor loadings, and residual variances) and the moderately large sample size ($N = 400$) make it difficult to achieve a nonsignificant p-value (e.g., Bentler & Bonett, 1980; Marsh, Balla, & McDonald, 1988). Furthermore, despite the exploratory nature of these analyses, we chose not to fine-tune these models with the addition of residual covariances or complex factor loadings. Post-hoc modifications with small to moderately sized samples may capitalize on chance and not replicate well.²

Figure 1 contains the standardized factor loadings from the CFA model. As expected, all of the hypothesized factor loadings were significant ($p < .001$) and moderate to large in magnitude. The size of the loading attests to the strength of the indicator (reflecting the latent construct) and psychometric soundness of the hypothesized construct. General Deviance was most strongly indicated by aggressive and unsafe behavior and less so by the attitudinal (personality) measure of risk-taking. Loadings corresponding to the indicators of the latent factor of Cognitive Efficacy were fairly equivalent in magnitude. The proportional loadings for self-esteem ($\lambda = .801$), self-reinforcement ($\lambda = .655$), cognitive mastery ($\lambda = .756$), and decision-making skills ($\lambda = .716$) underscore the strong empirical and conceptual overlap between elements of metacognitive strategies and perceived self-worth.

Personal Anomie was largely reflected by future life purpose, meaninglessness, and hopelessness and less so by loneliness ($\lambda = .316$). This discrepancy may indicate that as a whole, anguish, feelings of emptiness, despair over the future and the absence of strong interpersonal ties and friendship bonds capture partly distinct but somewhat overlapping portions of variation underlying emo-

FIGURE 1. **Confirmatory Factor Analysis model.** Large circles represent latent constructs, rectangles are measured variables, and single-headed arrows designate residual variances. Factor loadings are standardized and significance levels were determined by critical ratios on unstandardized coefficients. Double-headed curved lines represent factor intercorrelations.



tional and existential despair. Finally, the latent construct of Polydrug Use was most strongly indicated by frequency ($\lambda = .827$) and intensity ($\lambda = .851$) of marijuana use and least so by inhalant use ($\lambda = .227$). Univariate frequency distributions for inhalant use underscore the marked skew (8.38) and kurtosis (75.09) relative to the other drug use items, however, any deviations from normality should not strain the robustness of the maximum-likelihood estimation procedure.

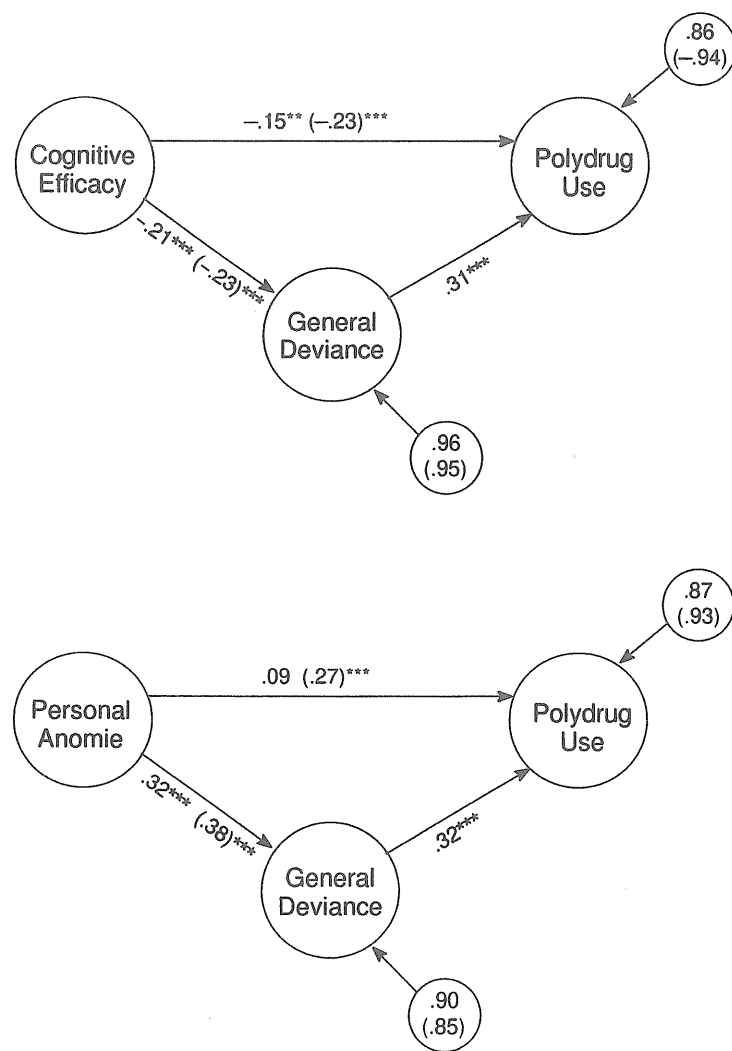
Also depicted in Figure 1 are the associations among the latent constructs. Interestingly, the association between Personal Anomie and Cognitive Efficacy was fairly large in magnitude reinforcing that despite their conceptual differences, affectively laden feelings of meaninglessness, hopelessness, and lack of purpose in life share substantial variation with cognitive mastery, perceived competence, decision-making skills, and self-reinforcement ($r^2 = 64\%$).

The remaining associations (refer to Figure 1) were consistent in direction and magnitude and are consonant with other reported findings in the literature regarding these constructs. General Deviance was positively related to (lack of) Purpose in Life and Polydrug Use and negatively related to Cognitive Efficacy. The association between Personal Anomie and Polydrug Use was the smallest of the bivariate associations ($r = .19, p < .01$).

Analytic Decomposition of the Mediational Processes

Figure 2 depicts the results of the models testing the mediational role of general deviance. In the first of two models, deviance is hypothesized to mediate the influence of cognitive efficacy (mastery and personal competence) on drug use. Fit statistics for this model indicated an adequate fit, $\chi^2(74, N = 416) = 295.72, p < .001$, CFI = .896, $\chi^2/df = 3.99$, RMSR = .04. As part of the test for mediation, we constrained the regression parameter associated with the indirect path between General Deviance and Polydrug Use to equal zero (equivalent to a null effect) and nested the model fit statistics from this restricted model against those from the full model without the restriction. The chi-square difference between the two models determines whether there is a significant decrement ($\Delta\chi^2$) associated with the 1 df change. A significant difference underscores significant mediation (and the necessity of the indirect

FIGURE 2. **Structural mediational models.** Large circles represent latent factors and small circles with numbers reflect residual variances. For purposes of clarity, observed variables are not shown. Numbers in parentheses are regression coefficients corresponding to a restricted model, which specified no indirect path from problem behavior to drug use. Path coefficients are standardized and significance levels were determined by critical ratios on unstandardized coefficients [$*p < .05$; $**p < .01$; $***p < .001$].



path), whereas a nonsignificant ($p > .05$) $\Delta\chi^2$ indicates that the path is not essential. In addition, the Comparative Fit Index (CFI) indicates the proportion of variation and covariation in the sample data accounted for by the hypothetical model. Any decrement in fit would be associated with a shrinkage in the CFI.

The nested difference, $\Delta\chi^2(1) = 26.79$, $p < .001$, and the shrinkage in the CFI (.896 compared to .884 with the restricted model) both indicated significant mediation. As expected with significant mediation, the size of the regression parameter associated with the path from Cognitive Efficacy to Polydrug Use corresponding to the full model (with mediation) was substantially lower ($\beta = -.15$, $p < .01$) than the size of the regression parameter based on the restricted model ($\beta = -.23$, $p < .001$). The proportion of the effect of Cognitive Efficacy on Polydrug Use that was mediated through General Deviance was 76% (MacKinnon, 1994). The second of two models depicted in Figure 2 hypothesized that General Deviance mediated the influence of Personal Anomie. While Personal Anomie had no significant direct effect on Polydrug Use with mediation ($\beta = .09$, $p > .05$), when the indirect path from General Deviance to Polydrug Use was constrained, Personal Anomie increased Polydrug Use ($\beta = .27$, $p < .001$). Model fit statistics for the full model, $\chi^2(74, N = 416) = 261.27$, $p < .001$, CFI = .887, the nested difference, $\Delta\chi^2(1) = 23.38$, $p < .001$, and the shrinkage in CFI (.887 full model compared to .873 restricted model) also underscored the statistical necessity of the mediational path. According to MacKinnon's formula for computing the percent mediation, 53.2% of the effect of Personal Anomie on Polydrug Use was mediated through General Deviance.

DISCUSSION

The current study examined the role of cognitive efficacy, personal anomie, and general deviance in predicting substance use in a sample of urban black youth. In addition, a second and no less important emphasis of this study was to examine the reliabilities and construct validities of several measures of general deviance, personal competence, and personal anomie during the critical adolescent years. Both questions can be framed within the larger research context of external validity, especially because drug etiology

models have been developed predominantly based on white youth and little empirical evidence attests to their predictive generalizability. Furthermore, the measures employed in many previous studies were psychometrically determined using homogeneous samples with little attempt at ethnic cross-validation.

Although the current study is not a precise replication of the Jessor model of problem behavior, a common fabric binds the current study to their conceptual framework. For instance, in the current study problem behavior (i.e., general deviance) was emphasized as a major and proximal determinant in the etiology of adolescent drug use. Elements of the personality system, for example, hopelessness, loneliness and personal competence, the former serving as proxies for alienation and the latter serving as a proxy for value on academic achievement, were tested for their impact on both general deviance and drug use. In effect, although the precise measures and their representative systems in the current study depart somewhat from the Jessors' model, the theoretical linkages remain consistent. In addition, the current models incorporated elements of Bandura's model of self-efficacy (Bandura, 1977, 1986) emphasizing the role of cognitive strategies, problem-solving efficacy, and self-reinforcement as risk and protective factors for early delinquency and substance use. Given the magnitude of both the direct and indirect effects of Cognitive Efficacy on Polydrug Use, the findings of the current study underscore the importance of including elements of both social-psychological and cognitive-behavior models and considering the strong interplay of these approaches as explanatory frameworks for antecedents of adolescent drug use.

Perhaps the most distinctive feature of the conceptual models tested is the continued primacy of general deviance in predicting substance use. Our measure (construct) of general deviance included indicators most likely to be regarded as elements of the personality system (sensation-seeking and unconventionality) in addition to self-reported delinquent behaviors (frequency of physical aggression and unsafe or risk-engendering behavior). The coalescing of personality attributes (attitudes) and behaviors deviates somewhat from the Jessors' model, however, the developmental linkages between attitudes and behaviors are much stronger in this age group and argue for their treatment as a single constellation, rather than as

independent sources of variation. For many adolescents there may be constraints (social sanctions) on specific behaviors (e.g., sexual activity), however, even in the absence of direct exposure or vicarious learning they may still develop risky attitudes that may engender experimentation with these behaviors.

Furthermore, whereas the Jessors regarded alienation and self-esteem as equipotential components of the personal belief structure, the current study examined the risk-engendering processes of alienation (i.e., loneliness and hopelessness) and self-esteem (in addition to the measures of personal competence) as separate operative systems. This effort was made partly to tease apart the relative contribution of each dimension (cognitive efficacy and personal anomie) to predicting drug use and partly because the mechanisms that potentiate drug use are complex and require that model building precede model testing, especially with small samples. By treating these highly overlapping ($r^2 = .64$), but somewhat divergent systems as two separate risk mechanisms, the current study has been able to obtain a more refined look at how affective and cognitive systems operate synergistically to stimulate substance use.

Implications for Prevention Interventions

In addition to establishing a basis for understanding how these risk mechanisms unfold in minority populations, the findings of the current study suggest several important implications for the design and implementation of drug abuse prevention interventions. First, the design of current drug prevention programs are dominated theoretically by social skills (e.g., Pentz, 1985), psychosocial (Flay, 1985), or cognitive-behavioral strategies (e.g., Botvin & Botvin, 1992). In general, affectively-based programs have not fared well empirically across a number of evaluations (Bangert-Drowns, 1988; Moskowitz, Schaps, Schaeffer, & Malvin, 1984; Schaps, Moskowitz, Malvin, & Schaeffer, 1986; Tobler, 1986) and have generally been discarded based on this *prima facie* evidence. Notwithstanding, the exclusion of minority youth and, to a large degree, a basic understanding of risk processes specific to underserved populations may have hampered our obtaining a better understanding of "what works and with whom." As the findings from the present study reinforce, and particularly for black minority youth, the conditions

of hopelessness and despair, suicidal ideation, and an impoverished view of their future were channeled through increased aggression, physical hostility, unconventionality, and greater sensation-seeking, all of which led to increased substance use. Accordingly, affective elements played a crucial role in the beginning stages of drug use for these youth and the neglect of these important risk factors may hinder the efficacy of current prevention efforts.

Second, and no less important, the findings of the current study highlight the importance of recognizing the parallels that exist between risk-engendering mechanisms in minority youth and those that have been observed to operate in samples comprised predominantly of white youth. These findings encourage prevention researchers to continue emphasizing the enhancement of personal and social competence, behavioral (refusal) skills, strong ties to normative institutions, and to provide targeted high-risk youth with concrete community-based alternatives to drug use, all in an effort to retard the development of delinquent behavior. Such efforts can be designed and incorporated under the umbrella of generic "life-skills" approaches, implemented in schools and a variety of other settings, and woven into the fabric of adolescent lifestyles in a timely and cost-effective manner.

Limitations

There are several limitations to the current research that merit further attention. The study focused on self-report measures canvassing a wide spectrum of behaviors (delinquency, aggression, and drug use), personality characteristics (risk-taking), and affective feelings (hopelessness). With respect to the measures of licit and illicit drug use, several investigators have reinforced empirically the utility and reliability of these methods (Single, Kandel, & Johnson, 1975; Stacy, Flay, Sussman, Brown, Santi, & Best, 1990; Stacy, Widaman, Hays, & DiMatteo, 1985). Under appropriate conditions of confidentiality and anonymity, self-reports appear to be reliable indicators of both deviant and drug using behaviors (White, 1992). However, with regard to the remaining psychosocial items, it is important to recognize the inherent limitations in relying solely on self-report methods (e.g., inflated correlations). Future studies to test the generality of these findings may want to broaden the scope

of measurement by including collateral sources of data (e.g., parents and teachers) and triangulate these sources to enhance internal validity.

Second, because of sample size limitations, the current models were purposely constrained in size and may have included too few variables required for explanatory models of adolescent drug use. As a result, the factor disturbance terms corresponding to both General Deviance and Polydrug Use represent the net effect of all terms that might affect these dimensions and that are not specified in the model. While a host of factors may influence the size of this regression parameter, the most important is the selection of predictors for inclusion in the model. To avoid model misspecification, future etiology research with minority youth may want to include a larger set of variables obtained from conceptual domains that have been linked empirically to adolescent drug use. Such efforts will serve to enhance our understanding of the risk processes that foster drug use in minority youth.

Finally, the cross-sectional nature of our data precludes exploration of specific developmental hypotheses. Drug use encompasses a wide spectrum of behavior with varying intensity and frequency of use patterns determining the extent and sequelae of the behavior. Based on an inspection of the mean levels and distribution of use patterns for the drug use items, most of these youth were either in the experimental or initiation stage of drug use, with few examples of extensive and problematic substance use. Importantly, future research will gain from examining the relative durability of these constructs in predicting both problem behavior and drug use. Perhaps, synergistic or reciprocal influences will better explain, for example, the relationships between hopelessness, despair, and drug use. Self-medication (e.g., Khantzian, 1985) and affective-coping (Labouvie, 1986a, b) models of drug use posit that drug use is an attempt to ameliorate dysphoric mood, which when left unremitted exacerbates drug use behavior into addictive cycles. The current data support only part of this contention, that hopelessness and feelings of despair are related to drug use. Importantly, the bulk of this relationship was mediated entirely through personality and behavioral characteristics of general deviance. Determination of whether continued feelings of hopelessness and a diminished view toward

the future lead to levels of affective distress that promulgate self-medication requires testing of developmental trends. Only with longitudinal data and baseline controls for early drug use will the precise causal mechanisms be revealed.

NOTES

1. It is important to note that due to their extreme sensitivity, items tapping suicidal behavior are problematic for implementation in school-based settings. Given the need for administrative approval and active parental consent in the current study, suicidal ideation items were favored over the use of items assessing suicidal behavior.

2. In general, post-hoc model fitting includes relaxing constraints (i.e., allowing complex factor loadings rather than maximizing simple structure) or adding residual covariances (both within and between constructs), the latter which captures elements of both method (i.e., item wording) and shared construct variance. To obtain a more fine-grained analysis of potential enhancements to measurement and structural models, the EQS statistical software program provides a multivariate stepwise modification procedure indicating where relaxing specific constraints might improve the overall goodness-of-fit (by decreasing the χ^2 sufficiently for each degree of freedom change (i.e., relaxed parameter), and likewise removing substantively meaningful covariation from the residual matrix.

This type of model enhancement must be approached with caution, especially because a recent series of simulation analyses have demonstrated empirically the fragility of these modifications with small-to-moderately-large sample sizes (e.g., less than 2,000; Bollen, 1990; MacCallum, Roznowski, & Necowitz, 1992). Thus, no attempt was made to "fine-tune" the CFA models through a series of specification searches.

3. In a series of path regression models not reported here, we tested the ability of the three psychosocial constructs to predict drug use simultaneously. However, the high association between Personal Anomie and Cognitive Efficacy created a problem of "bouncing betas" and regression coefficients that exceeded their statistical limits (which often occurs with high multicollinearity). This problem is partly a function of the small sample size, the high obtained collinearity between two of the constructs, and the instability of the estimated standard errors. As a result, we decided to disentangle the empirical and statistical problem, pare down the model into conceptually discrete systems and present two separate models that independently test the mediational properties of General Deviance. Although the presentation of separate models somewhat circumvents establishing empirically the unique variance contributions of each of the psychosocial constructs when controlling for the remaining latent factors, the presentation of separate models is guided by substantive theory and provides an opportunity to examine putative risk mechanisms, albeit the regression parameters associated with these mechanisms may be somewhat inflated.

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