A Replication and Elaboration of the Esteem-Enhancement Model

William A. Vega, Eleni Apospori, Andres G. Gil, Rick S. Zimmerman, and George J. Warheit

Adolescents treated in clinical settings for drug use problems are often observed to have low self-esteem. This has led some researchers to the belief that mood or personality characteristics of adolescents predispose them to drug use. However, longitudinal field studies have failed to confirm a direct relationship between low self-esteem and substance abuse (Petrakis et al. 1995). Evidently, if an important causal relationship exists between self-esteem and drug use in the nonclinical adolescent population, it is complex and mediated by other factors. To address this issue, explanatory theories are needed that can organize the relationships between drug abuse and its antecedent causes including low self-esteem. One of the few theoretical approaches that has been put forward for empirical verification is the esteem-enhancement theory of Kaplan, Johnson, and Bailey (1986a, 1987, 1988).

The central premise of Kaplan et al.'s theory, empirical model (1986a), and subsequent elaborations of same (1987, 1988) is that adolescents seek acceptance and approval for their behavior. Serious deviations from conduct expectations of parents, teachers, and others whose opinions are valued can become a source of psychological distress for adolescents that must be resolved. Youth in early adolescence are susceptible to psychological pain and anguish if they lose favor with adults who are objects of affection and authority. Resulting feelings of self-rejection experienced by the adolescent require a corrective or compensatory response. This response may take several forms and can be understood as a contingency in the esteem-enhancement model. Negative social responses and sanctions may result in a change of adolescent behavior toward conformity with expectations of parents or other authority figures, depending on the source of self-esteem.

However, these the distress. The reversing negative personal cost to rating behavior because of threatened, tolerated, and potential peer associations being the case, so it more desirable to the behavior that parent and teacher.

To cope with the significant adults, draw from or neutral such opinions and justify continued otherwise, over time, the authority figures over the adolescent probability of contextual associations increased because vide social support deviation from deviation potentially drug use.

Despite the appearance of the Kaplan model, their work has implication in order to findings from a singularized to other school adolescents. Previous the Kaplan theory have not been enenier et al. 1981; 1984; Wells and contradictory findability and generalizability enhancement model leagues have observed analyses undertaken.
ESTEEM-ENHANCEMENT MODEL

other authority figures, thereby alleviating the source of distress and restoring self-esteem.

However, these actions may not resolve the distress. The adolescent may find that reversing negative opinions of others is not entirely an act of personal volition. Social labeling may have occurred, thereby hardening perceptions of parents and teachers toward the adolescent, and making it difficult to shed the deviant image. The adolescent may find that there is a personal cost to moving toward conforming behavior because satisfactions and rewards forthcoming from deviant behavior are threatened, self-image must be altered, and a potential rejection of valued peer associations may be required. This being the case, some adolescents may find it more desirable or feasible to continue the behavior that has been the source of parent and teacher derogation.

To cope with the negative reactions of significant adults, adolescents may withdraw from or neutralize the importance of such opinions and develop attitudes that justify continued deviant behavior. Therefore, over time, the negative sanctions of authority figures lose their social control over the adolescent. When this occurs, the probability of continuing or initiating personal associations with deviant peers is increased because these relationships provide social support and attitudinal justification for deviant behavior. They also provide a potential social learning context for drug use.

Despite the apparent utility and parsimony of the Kaplan, Johnson, and Bailey model, their work has lacked full-scale replication in order to confirm whether findings from a singular study can be generalized to other school-based populations of adolescents. Previous attempts to replicate the Kaplan esteem-enhancement theory have not been entirely successful (Byrner et al. 1981; McCarthy and Hoge 1984; Wells and Rankin 1983). These contradictory findings undermine the viability and generalizability of the esteem-enhancement model. Kaplan and colleagues have observed that "multivariate analyses undertaken to test Kaplan's theory and to redress shortcomings in his earlier work seem to introduce deficiencies that preclude anything but the finding of negligible effects" (Kaplan et al. 1986b, p. 387). The major problems in the replication efforts, as judged by Kaplan and colleagues, have been associated with improper measurement of self-rejection (measured as self-esteem only, rather than as global rejection) and the lack of specification of appropriate intervening variables.

The developmental processes of early adolescence are challenging to capture through empirical studies. Nevertheless, carefully designed community longitudinal studies afford an opportunity to isolate the interplay of social psychological factors leading to deviant behavior, including drug use, among adolescents. This paper reports a careful and major replication of the esteem-enhancement model to determine if Kaplan and his colleagues are correct about the viability of their model, notwithstanding the failure to replicate by other investigators.

The Esteem-Enhancement Model
And Other Psychological Explanations Of Deviance

The esteem-enhancement model approximates a general theory of deviance as formulated by a number of theorists over several decades. These theories share common explanatory themes and assumptions in explaining deviance (Petraitis et al. 1995) and are fundamentally social psychological in orientation. Individuals are assumed to be motivated to achieve self-acceptance and avoid feelings of self-rejection by conforming to group behavior expectations or seeking valued societal rewards. The choice or movement toward conventional or deviant behavior is dependent on several factors: varied sources of socialization in the environment of the adolescent including peer associations, perceived access to the societal opportunity structure, a history of familial conflicts or poor school adjustments, internalized social definitions of low self-worth,
and risk taking and rebelliousness, which exemplify maturational processes of American adolescence. If conventional behavior proves too difficult to maintain or is less rewarding than deviant behavior, a deterioration of commitment to conventional norms and social bonds that sustain them will ensue. Although conventional behavior is assumed to be normative, this may not be the case because attitudes favoring deviant behavior are more available or attractive for some individuals for resolving feelings of self-rejection that emerge from social interaction with authority figures such as parents and teachers.

The esteem-enhancement model is an example of a general theory of deviance drawn from a voluminous literature on crime and delinquency. These theories characterized adolescents as adaptive and responsive to learning opportunities and social influences. Social learning theories of deviance (Sutherland 1939) focused on socialization into deviant behavior. Theories of negative self-concept (Kaplan 1972, 1975; Reckless et al. 1956) looked at the influences of negative evaluations of self on conforming and negative behavior. Structured strain (Cloward and Ohlin 1960; Merton 1938) described discontinuities in opportunity structures between widely accepted societal material goals and unequal access to instrumental means for achieving these goals, which resulted in strains and negative self-concept for some individuals. Containment theory (Reckless 1967; Reckless et al. 1956) was concerned with the process of inculcating and reinforcing conduct norms through social control of reference groups. And labeling theories (Becker 1963; Lemert 1951) looked at the enduring effects of formal sanctioning on the formation of deviant identity.

Few of these original theories were subjected to empirical verification when they were initially set forth because of the inadequacy of methodological and statistical procedures at the time of their development. Moreover, even today large empirical studies designed to test theories of adolescent delinquency or drug use are uncommon, in part because of the significant logistical, cost, and scientific burdens incurred in this type of research. However, several of these studies have concurred in the finding that self-esteem deficits among adolescents produced receptivity to conventional behavior expectations as well as to deviant peers (Jessor and Jessor 1977; Mellinger et al. 1975; Segal 1975; Smith and Fogg 1978). And attitudes and beliefs about drug use seem to be the common mediators between drug use and the multiple antecedent causal factors routinely identified in clinical and risk factor studies. In other words, although it is currently believed that there are multiple paths (e.g., multifactorial explanations) that produce adolescent drug use, these paths must necessarily culminate in attitudes (e.g., cognitive expectancies) and beliefs that are favorable to drug use if these putative risk factors are to be truly causal (Petraitis et al. 1995). It is also clear from clinical and epidemiologic literatures that social experiences with deviant peers often form the basis for this attitudinal formation favoring drug use (Sher 1991).

The Replication of The Esteem-Enhancement Theory

Kaplan, Johnson, and Bailey (1988) note that the movement toward delinquent and drug-using behavior often has common antecedents because drug use usually represents a modality of delinquent behavior. Early adolescent drug use or delinquent behavior can be expected to have a direct relationship (e.g., a main effect) on later drug use or delinquent behavior. In short, a reliable predictor of future behavior is past behavior. However, early adolescent drug use or delinquent behavior may produce punitive responses and problems for the adolescent, and pressures from parents or other authority figures to change offensive behavior. The resulting sanctions will produce feelings of self-rejection that, over time, will become

increasingly untenable and resolution will assure the emotive suggests (Kaplan reinforcement of empathy, via the effects on the child of an alienating world, (2) the deviant peer to positive self-esteem, (3) the normative ex- states that defi appropriate (p. 11).

The esteem-enhancement replicate is consistent with adolescent drug use. Johnson, and Bai uses structural equation models. Adolescent drug use is a result of deviant variables which wave data for: (1) factors that increase expl use, (2) decompositor the interpollation and vening variables, (3) the influence of variables on fear, (4) on effects. The five va construct of the model and included drug use, negative position to deviance.

This replication of a different social environment, different ethnic/racial groups than the original (1988), thereby offers opportunity to assess the model for future studies. The origin of a sample drawn twings are based on a size due to higher than the original. Of replication study, the present point of contem-
Increasingly untenable for the adolescent, and resolution will be required in order to assuage the emotional distress. As Kaplan suggests (Kaplan and Johnson 1991), “the reinforcement of deviant behavior occurs via the effects of negative sanctions on (1) increasing alienation from the conventional world, (2) increasing interaction with deviant peers, and (3) motivating the person to positively value and identify with the deviant status, and to conform to the normative expectations for deviant statuses that define deviant behavior as appropriate (p. 117).”

The esteem-enhancement model, that we replicate is consistent with the model of adolescent drug use reported in Kaplan, Johnson, and Bailey (1988). This model uses structural equation modeling to predict adolescent drug use from five antecedent variables using longitudinal three-wave data for: (1) specifying direct effects, (2) decomposing direct effects through the intercorrelation of hypothesized intervening variables, (3) specifying antecedents of variables that modify their direct effects, and (4) exposing suppressor effects. The five variables represent core constructs of the esteem-enhancement model and include self-rejection, earlier drug use, negative social sanctions, disposition to deviance, and peer drug use.

This replication takes place in a very different social environment and with a different ethnic/racial sample composition than the original work of Kaplan et al. (1988), thereby offering an excellent opportunity to assess the salience of the model for future research and prevention studies. The original study was based on a sample drawn two decades ago, and findings are based on a much smaller sample size due to higher attrition in the original study than we experienced in ours. Therefore, our study is in some ways a more robust and contemporary test of the model than the original. Moreover, the absence of replication studies is perhaps the weakest point of contemporary social psychiatric and deviance research.

**Methods**

**Study Overview**

These data were derived from a three-wave longitudinal study of adolescent boys attending middle schools in Dade County, Florida. The research was designed, in part, to determine the demographic, social, and psychosocial factors generally associated with the initiation, cessation, and habituation of alcohol, drug, and cigarette use among young adolescents. The data were collected through questionnaires completed at school during the fall of 1990, fall of 1991, and the spring of 1993. At Time 1 (T1) the boys were attending middle school (6th or 7th grade), and at Time 3 (T3) they were attending 8th or 9th grade.

**Sample Selection**

All of the middle schools in Dade County agreed to take part in the study at T1 and during the subsequent years. The T1 cohort of boys consisted of 6760 boys; the consent rate was 71.3%. At Time 2 (T2) 6089, or 90.0%, of the T1 boys were relocated and completed questionnaires. Additional details about the questionnaire administration procedures and sample statistics for T1 and T2 are presented elsewhere (Vega et al. 1993a, 1993c).

The third administration of the questionnaire was conducted in the spring of 1993. At T3, 5516 of the original sample of boys were listed as attending public schools in the county. Data were collected from 5370 boys, or 79.4% of the original 6760 boys in the sample. There were 238 boys absent during the T3 data collection after repeated makeup administrations. Additionally, 208 students moved away between T2 and T3.

The combined T1, T2, and T3 sample consisted of 4555 boys. This represents 67.4% of the original T1 sample of 6760, and 75% of the T2 sample of 6089. The racial/ethnic composition of the sample was multiethnic, consisting of 1284 (28.2%)
adolescents of Cuban descent, 383 (8.4%) Nicaraguans, 1267 (27.8%) adolescents of multiple Hispanic origins from Central and South America; 618 (13.6%) African Americans, 632 (13.9%) White non-Hispanics, 127 (2.8%) Haitians, 136 (3.0%) non-Hispanic Caribbean Blacks, and 108 (2.4%) of other ethnic backgrounds, which included Native Americans, and Pacific Islanders.

Attrition Analysis

Four sets of analyses were conducted to assess possible attrition bias between longitudinal and dropout participants in the study, that is, between those in Years 1, 2, and 3, on the one hand; and those in Year 1 but not in Year 2 or Year 3, or both. First, dropouts from the study were compared to those that were retained in the sample, using chi-square or t-test analyses. Second, a stepwise multiple logistic regression was conducted to assess the contribution of key variables in the prediction of attrition. The list of key variables included grade in school, race/ethnicity, nativity, history of family drug and alcohol use, family functioning, school behaviors, delinquency, and drug use, as well as peer drug use, etc. Third, weights were constructed to correct for attrition due to significant variables. Then, the prevalence rates on key risk factors and the outcome variables were compared using different methods of sample weighting. Fourth, correlation matrices among 29 key independent and dependent variables were compared between the longitudinal and the dropout sample, using LISREL covariance structure analysis, to assess whether the correlation matrix for the dropout sample was similar to that of the longitudinal sample.

It is important to note that dropouts in this study are not particularly related to school dropout, in part because of the relatively early grades in middle school. The dropout from the study is largely due to moving to a different geographical location or switching from public to private schools. The analyses suggested that these are, in fact, not likely dropouts but higher-SES and somewhat better students.

While the dropout sample had slightly higher prevalences of cigarette, alcohol, and marijuana use, these differences were not statistically significant when other variables of interest were controlled. Furthermore, the logistic regression equation correctly classified fewer than 7% of the individuals who dropped out from the study, and weights based on variables significantly different between the longitudinal and dropout samples produced a very small impact on prevalence of key outcome variables. Also, correlation matrices among 29 central independent, mediating, and dependent variables were compared between the dropout sample and longitudinal sample via LISREL, with an adjusted goodness of fit index (AGFI) of .955 for equality of matrices, suggesting a very good fit, that is: it is quite reasonable to conclude that the correlation matrices are essentially equivalent. Consequently, results for longitudinal analyses are presented without the use of weights, as correction of the longitudinal sample for possible attrition bias is unnecessary. Further information (and tables) on these analyses can be made available upon request to the authors.

Measures

Illicit drug use was conceptualized as the adolescent’s experimentation with four illicit drugs in his lifetime and was measured by a single indicator 4-item scale (crack use, PCP use, use of uppers or downers, use of tranquilizers). Following the model of Kaplan and his colleagues (1988), this measure was used as a scale with fixed reliability rather than as a multiple indicator latent construct. Since the four items measuring illicit drug use were dichotomous variables reflecting the occurrence of rare events and were, therefore, potentially skewed, the use of these four variables as multiple indicators of a latent construct in a covariance matrix would probably cause problems (Kim and Rabjohn).

Self-rejection was (1) “the person’s subjective derogating attitudes w experiences in convent groups” (Kaplan et al. latent construct of self), (2) a 4-item scale indicating self-worth deviation from norms and unfavorable normative behavior, represented by two variables: (1) a 6-item scale of attitudes toward others and (2) a 2-item scale of peer drug use, etc. Third, weights were constructed to correct for attrition due to significant variables. Then, the prevalence rates on key risk factors and the outcome variables were compared using different methods of sample weighting. Fourth, correlation matrices among 29 key independent and dependent variables were compared between the longitudinal and the dropout sample, using LISREL covariance structure analysis, to assess whether the correlation matrix for the dropout sample was similar to that of the longitudinal sample.

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would probably cause estimation problems (Kim and Rabjohn 1980).

Self-rejection was conceptualized as "the person's subjective association of self derogating attitudes with self devaluing experiences in conventional membership groups" (Kaplan et al. 1988, p. 148). The latent construct of self-rejection consisted of three measurement variables: (1) a 12-item scale indicating self-derogation; (2) a 4-item scale reflecting perceived rejection by teachers; and (3) a 3-item scale reflecting perceived rejection by parents. The items representing these constructs are presented in the Appendix.

Disposion to deviance was measured by respondents' favorable attitudes toward deviation from conventional group norms and unfavorable attitudes toward normative behavior. This construct was represented by two measurement variables: (1) a 6-item scale indicating favorable attitudes toward deviant behavior; and (2) a 2-item scale reflecting unfavorable attitudes toward normative behavior. The items for this variable are presented in the Appendix.

The latent construct of the association with drug approving and drug using peers was measured by two variables indicating approval of drugs by close friends and use of drugs by close friends. These variables have been used extensively in the Monitoring the Futures studies (Johnston et al. 1993). Each of these two variables consists of two items: (1) How do you think your close friends feel about people who (a) smoke marijuana, (b) use cocaine, and; (2) how many of your close friends do you think (a) smoke marijuana, (b) use cocaine.

Finally, the latent construct of problems caused by drug use was derived from the second panel wave. The construct is conceptualized in terms that having experienced problems related to drug use will lead to greater associations with individuals within the drug subculture, greater valuing of norms consistent with drug use, and subsequently greater drug use. Kaplan and his colleagues introduced this concept as negative social sanctions.

Since Kaplan et al.'s (1986a) original intent was the general explanation of delinquency, the use of drug use problems as an indicator of social sanctions is more specific to the explanation of substance abuse. The concept was measured using one item, introduced in the study immediately after the substance abuse items. It asked respondents to indicate, if they had used any of the previously mentioned drugs, whether the drug use had "ever caused any problems" for them.

Analysis

The analyses follow the procedures used by Kaplan and colleagues (1988), since the purpose of this study is the replication of those empirical tests. For the test of the causal models, LISREL VII is used (Joreskog and Sorbom 1989). The models are longitudinal, with Time 1 and Time 2 measures used to predict Time 3 drug use while controlling for Time 1 drug use. This allows establishing temporal relationships among the constructs as well as the inclusion of estimates of measurement errors into the estimation procedures.

Four models are tested following Kaplan et al.'s procedures. At each stage new constructs are introduced into the model in order to elaborate the test of the theory. The resulting models are presented simultaneously with the Kaplan et al. models in order to ascertain the replicability of those models at each subsequent stage.

RESULTS

Model I

The first model has three latent constructs. It represents the effects of Time 1 self-rejection to Time 2 disposition to deviance, to Time 3 illicit drug use.

The unstandardized and standardized estimates of this measurement model are presented in Table 1. The estimates indicate the factor loadings of the observed variables on the latent constructs. For each of the two endogenous latent constructs, that is, Time 2 Disposition to De-
Table 1

MEASUREMENT MODEL I (BASELINE): FACTOR LOADINGS OF MEASURED VARIABLES ON LATENT CONSTRUCTS PRESENTED IN FIGURE 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized</th>
<th>Standardized</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1 Self-rejection</td>
<td>0.64</td>
<td>.64</td>
<td>38.13</td>
</tr>
<tr>
<td>Self-deprecation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rejection by parents</td>
<td>0.71</td>
<td>.71</td>
<td>42.24</td>
</tr>
<tr>
<td>Rejection by teachers</td>
<td>0.72</td>
<td>.72</td>
<td>42.68</td>
</tr>
<tr>
<td>Time 2 Disposition to Deviance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favor attitudes toward deviance</td>
<td>1.00</td>
<td>.78</td>
<td></td>
</tr>
<tr>
<td>Unfavor attitudes toward deviance</td>
<td>-0.66</td>
<td>-.52</td>
<td>-15.22</td>
</tr>
<tr>
<td>Time 3 Illicit Drug Use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illicit drug use</td>
<td>1.00</td>
<td>.57</td>
<td></td>
</tr>
</tbody>
</table>

\[
e^2 = (s^2 - r^2)S^2 \quad \text{or} \quad e^2 = (1 - r^2)
\]

where \( s^2 \) is the total observed variance in the variable.

Structural Model I. The estimated structural parameters for the Baseline Model are presented in Figure 1. For comparison purposes, we also present Kaplan et al.’s (1988) respective models. Overall, the data replicate the Kaplan et al. data. The standardized effect of Self-rejection on Disposition to Deviance is .45 in the replicated model and .60 in Kaplan et al.’s model. Parenthetically, it should be mentioned that from this point on, we follow the convention of reporting in parentheses Kaplan et al.’s respective estimates immediately following the estimates of the coefficients of our models. The standardized effect of Disposition to Deviance on Illicit Drug Use is .45 (.41). The value of 29.58 for the chi-square is very similar to that obtained by the Kaplan et al. model (24.50), indicating that the two models are very similar. Since chi-square depends on the size of the sample, large samples like our own (\( N = 4104 \)) tend to show poor fit when estimated by the chi-square test. Therefore, we focus on the results of the adjusted goodness of fit index (AGFI), which is less sensitive to sample size. The value of .994 of the fit index, that is, the AGFI, showed a very satisfactory fit of our model. We also estimate our models under the assumption of sample size simil-
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Replicated Model

<table>
<thead>
<tr>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Rejection</td>
<td>Disposition to Deviance $r^2 = .45$</td>
<td>Later Drug Use $r^2 = .20$</td>
</tr>
</tbody>
</table>

AGFI = 964

Chi square = 29.58 df = 8

If $N = 2,000$, Chi square = 14.41 df = 8

Kaplan's Model

<table>
<thead>
<tr>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Rejection</td>
<td>Disposition to Deviance $R^2 = .36$</td>
<td>Later Drug Use $R^2 = .17$</td>
</tr>
</tbody>
</table>

Chi square = 24.5 df = 8

Figure 1.


The latent construct of Time 1 Illicit Drug Use was introduced in Model II as a control variable for Time 3 Illicit Drug Use. Therefore, the structural parameters in Model II indicate the causal processes of the Model I net of the effect of earlier drug use. Time 1 Illicit Drug Use has the same fixed reliability coefficient as Time 3 Illicit Drug Use, that is $r = .570$.

The unstandardized and standardized estimates of the measurement model are presented in Table 2. With the exception of the measured variable of Time 1 Illicit Drug Use, all of the other measurement parameters remained the same as in the baseline model. As shown in Table 2, the factor loadings of this model are almost the same as the factor loadings of the baseline model.

### Model II

The latent construct of Time 1 Illicit Drug Use was introduced in Model II as a control variable for Time 3 Illicit Drug Use. Therefore, the structural parameters in Model II indicate the causal processes of the Model I net of the effect of earlier drug use. Time 1 Illicit Drug Use has the same fixed reliability coefficient as Time 3 Illicit Drug Use, that is $r = .570$.

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### Structural Model II

The estimated structural parameters of Model II are presented in Figure 2. As in the Kaplan et al. model (1988), the inclusion of earlier Illicit Drug Use as a control variable slightly attenuates the effect of the structural parameters on Time 3 Illicit Drug Use. However, the model indicates that the causal effect of Self-rejection to Disposition to Deviance $[.42, p < .001, (.57)]$, as well as the effects of the latter on later drug use $[.39, p < .001, (.34)]$ are independent of the control variable of earlier drug use. A major difference from the Kaplan et al. model was that earlier drug use had a significant effect on Disposition to Deviance $[.12, p < .001 (NS)]$, which is an expected theoretical outcome. Also, earlier drug use significantly affected Self-rejection $[.20, p < .001 (.32)]$. Although these effects of earlier drug use on Self-rejection and on Disposition to Deviance attenuate the observed zero-order stability of Time 1 to Time 3 Drug use $[.34 (36)]$, the estimated causal direct effect $[.25 (.29)]$ is highly significant ($p < .001$).

The inclusion of Time 1 Illicit Drug Use in Model II increased the $R$-square from $0.17$ in Model I, to $0.24$. The adjusted goodness of fit index showed a very good fit of the model (.995). If $n$ were 2000, the value of the chi-square would be 14.73, with 11 degrees of freedom, suggesting a better fit to the data that the Kaplan et al. model, which had a chi-square of 62.9. Moreover, the ratio of chi-square to degrees of freedom (17.73/11) is very close to 1, again indicating a better fit of our model to the data.
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Table 2

MEASUREMENT MODEL II: FACTOR LOADINGS OF MEASURED VARIABLES ON LATENT CONSTRUCTS PRESENTED IN FIGURE 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor Loadings</th>
<th>Standardized</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1 Illicit Drug Use</td>
<td>0.57</td>
<td>.57</td>
<td>28.81</td>
</tr>
<tr>
<td>Illicit drug use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 Self-rejection</td>
<td>1.00</td>
<td>.63</td>
<td>28.99</td>
</tr>
<tr>
<td>Self-dereogation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rejection by parents</td>
<td>1.12</td>
<td>.70</td>
<td>28.99</td>
</tr>
<tr>
<td>Rejection by teachers</td>
<td>1.13</td>
<td>.71</td>
<td>29.00</td>
</tr>
<tr>
<td>Time 2 Disposition to Deviance</td>
<td>1.00</td>
<td>.80</td>
<td></td>
</tr>
<tr>
<td>Favor attitudes toward deviance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unfavor attitudes toward deviance</td>
<td>-0.64</td>
<td>-.51</td>
<td>-15.20</td>
</tr>
<tr>
<td>Time 3 Illicit Drug Use</td>
<td>1.00</td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>Illicit drug use</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Model II

The third model introduces the latent construct of association with drug-approving and drug-using peers. In Model III, this construct intervenes between Time 3 Illicit Drug Use and all of its predictors. It is hypothesized that the latent construct of association with drug-approving and drug-using peers will explain a substantial part of the unexplained variance up to this point of the construct of later drug use, and that at the same time it will attenuate all of the direct effects of the rest of the predictors of later drug use. Also, it is hypothesized that the association with drug-approving and drug-using peers is a consequence of earlier involvement with drugs, self-rejection, and disposition to deviance.

The factor loadings of the third model are presented in Table 3. The drug-using peers variable is fixed to 1 in order to give the metric to the construct. Although the t value of the loading of this variable cannot be estimated, it loads substantially (.60) on the construct. The drug-approving peers variable has a significant loading (.51, p < .001) on the construct as well. The other measurement parameters have the same pattern of fixed and free estimates as well as the same estimates as in Model II.

Structural Model III. The structural parameters of this model are shown in Figure 3. The constraining effects of the drug-approving peers variable have a significant effect on the explained variance from .26 (.24) found in Kaplan et al. for the reduced construct play: mediating the effects of self-rejection and disposition to deviance. In the Kaplan et al. model, the parameters are constrained to be equal across the three time points, but in the present model, they are allowed to vary. This results in a significantly better fit to the data, as indicated by the goodness-of-fit indices shown in Table 4. The chi-square test for the overall model is significant at the .001 level, indicating that the model provides a good fit to the data. The root mean square error of approximation (RMSEA) is also calculated and found to be .06, which is considered a good fit. The comparative fit index (CFI) is calculated and found to be .95, which is also considered a good fit. The standardized root mean square residual (SRMR) is calculated and found to be .04, which is also considered a good fit.
ESTEEM-ENHANCEMENT MODEL

Table 3
MEASUREMENT MODEL III: FACTOR LOADINGS OF MEASURED VARIABLES ON LATENT CONSTRUCTS PRESENTED IN FIGURE 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized</th>
<th>Standardized</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1 Illicit Drug Use</td>
<td>0.57</td>
<td>0.57</td>
<td>28.21</td>
</tr>
<tr>
<td>Illicit drug use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 Self-rejection</td>
<td>1.00</td>
<td>0.63</td>
<td>28.24</td>
</tr>
<tr>
<td>Self-derogation</td>
<td>1.11</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Rejection by parents</td>
<td>1.14</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>Rejection by teachers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 2 Disposition to Deviance</td>
<td>1.00</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>Favor attitudes toward deviance</td>
<td>-0.65</td>
<td>-0.52</td>
<td>-21.15</td>
</tr>
<tr>
<td>Unfavor attitudes toward deviance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 2 Peer Influence</td>
<td>1.00</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>Peers use drugs</td>
<td>0.85</td>
<td>0.51</td>
<td>18.78</td>
</tr>
<tr>
<td>Peer approve of drug use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 3 Illicit Drug Use</td>
<td>1.00</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>Illicit drug use</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The drug-using parameters of this model are presented in Figure 3. The construct of drug-using peers has a significant (p < .001) direct effect [.38 (.44)] on later drug use. As expected, drug-using and -approving peers have a substantial contribution to the explained variance of the construct from .26 (.24) to .32 (.37). Also, as found in Kaplan et al.'s model, the introduced construct plays a significant role in mediating the effects of earlier drug use and disposition to deviance on later drug use. In the Kaplan et al. model the addition of the construct of drug-using peers attenuates substantially the direct effect of disposition to deviance on later drug use from b = .34 to b = .15. In our model the mediating construct makes that direct effect statistically not significant. Also, the construct attenuates the stability of drug use from .25 (.29) to .21 (.20).

The adjusted goodness of fit index showed a very good fit of the model (.995). The value of 38.86 for the chi-square, given the 20 degrees of freedom of our model, indicates a better fit of the model.
to the data than in Kaplan et al.’s model (chi-square = 84.9). Furthermore, the chi-square of 20.57 if n were 2000 indicates an even better fit of the model than the Kaplan et al. results with a similar sample size of 2000.

Model IV

The fourth model introduces the construct of problems caused by drug use. This construct is measured by a single indicator from the second panel wave and it contains three values. The highest value (2) indicates prior drug use, and no negative sanctions or problems caused by drug use. The second value of 1 indicates that the adolescent has used drugs and received negative sanctions through problems caused by the drug use. And, finally, a value of 0 indicates no prior drug use, as well as no negative sanctions. As stated in the methods section, this construct is conceptualized in terms of the effects that negative social sanctions might have on the person. In the esteem-enhancement model, Kaplan and his colleagues (Kaplan and Fukurai 1992; Kaplan and Johnson 1991) state that deviant behaviors can be indirectly reinforced via the effects of negative sanctions.

The unstandardized and standardized estimates of the measurement models for Model IV are presented in Table 4. In Model IV(a) none of the errors are allowed to be correlated with any other error term. However, the fit of the model improves substantially when the error term of self-rejection correlates with the error term of teacher rejection (r = .10), and the error term of favorable attitudes toward deviance correlates with drug-using peers (r = .12). A second variation of the fourth model [Model IV(b)] contains these specified correlated error terms.

Since we do not expect the single indicator of the introduced latent factor to measure this construct (drug use caused problems) without error, we fixed the unstandardized error variance to a nonzero value (.60) estimated the same way as estimated for earlier drug use. The estimates for the rest of the measurement parameters remain virtually the same as in the previous models.

Structural Model IVa/IVb. The structural parameters of the fourth model are illustrated in Figures 4 and 5. Since Model IV(a) and Model IV(b) have virtually the same structural parameters, and since Model IV(b) has a substantially better fit than Model IV(a), we focus the discussion on the estimated parameters of Model IV(b) (Fig. 5).

Figure 5 shows that, as expected, the construct of drugs caused problems mediates between earlier and later drug use, and attenuates the drug use stability to a statistically nonsignificant level (.09, NS). Also, it attenuates the direct affect of the peers construct on later drug use from .33 to .20. The construct introduced in Model IV(b)—that is, drugs caused problems—has the strongest direct effect on Time 3 Illicit Drug Use and it increased the explained variance of the latter from .32 to .45. The drugs caused problems construct has a significant impact on both Disposition to Deviance (.56) and the association with drug-using and drug-approving peers (.35). The positive direction of these relationships may appear counterintuitive, that is, problems caused by earlier drug use lead to greater disposition to deviance, more involvement with drug use among peers, and greater Time 3 drug use. Recall that the values of the drugs caused problem construct were: 2, which indicates earlier drug use with no negative sanctions or problems related to the drug use; a value of 1, indicating prior drug use accompanied with problems caused by the drug use; and 0, for no earlier drug use and no problems caused by drug use. Thus, the positive effects indicate that earlier drug users were more likely to increase drug use at Time 3. However, it difficult to assess whether the positive effects of the drugs caused problems construct are due to the group of prior drug users with negative sanctions (value of 1) or those with no sanctions (value of 2). Further decomposition of this construct shows that the group of prior drug users with negative so-
Table 4
MEASUREMENT MODEL IV: FACTOR LOADINGS OF MEASURED VARIABLES ON
LATENT CONSTRUCTS PRESENTED IN FIGURES 4 AND 5

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model IV(a)</th>
<th>Factor Loadings</th>
<th>Model IV(b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1 Illicit Drug Use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illicit drug use</td>
<td>0.57</td>
<td>.57</td>
<td>0.57</td>
</tr>
<tr>
<td>Time 1 Self-rejection</td>
<td>1.00</td>
<td>.63</td>
<td>1.00</td>
</tr>
<tr>
<td>Self-derogation</td>
<td>1.12</td>
<td>.70</td>
<td>1.31</td>
</tr>
<tr>
<td>Rejection by parents</td>
<td>1.14</td>
<td>.71</td>
<td>1.15</td>
</tr>
<tr>
<td>Rejection by teachers</td>
<td>1.00</td>
<td>.63</td>
<td>1.00</td>
</tr>
<tr>
<td>Time 2 Problems from Drugs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drugs caused problems</td>
<td>1.00</td>
<td>.63</td>
<td>1.00</td>
</tr>
<tr>
<td>Time 2 Disposition to Deviance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favor attitudes toward deviance</td>
<td>1.00</td>
<td>.81</td>
<td>1.00</td>
</tr>
<tr>
<td>Unfavor attitudes toward deviance</td>
<td>-0.63</td>
<td>-.51</td>
<td>-0.68</td>
</tr>
<tr>
<td>Time 2 Peer Influence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peers use drugs</td>
<td>1.00</td>
<td>.59</td>
<td>1.00</td>
</tr>
<tr>
<td>Peer approve of drug use</td>
<td>0.87</td>
<td>.62</td>
<td>0.95</td>
</tr>
<tr>
<td>Time 3 Illicit Drug Use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illicit drug use</td>
<td>1.00</td>
<td>.57</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Model IV(b) includes correlated error terms: self-rejection/rejection by teachers ($r = .10$); favor attitudes toward deviance/peers use drugs ($r = .12$).
Replicated Model

Time 1  
Self Rejection R² = 0.53  
Disposition to Deviance R² = 0.57  
Drug use Among Peers R² = 0.53

Time 2  
Disposition to Deviance R² = 0.49  
Later Drug Use R² = 0.45

Time 3  
Drug use Among Peers R² = 0.53

Kaplan's Model

Time 1  
Self Rejection R² = 0.51  
Disposition to Deviance R² = 0.49

Time 2  
Drug use Among Peers R² = 0.53

Time 3  
Drug use Among Peers R² = 0.53

AGFI= .996

Chi square= 32.21 df= 24
(df N= 2,000, Chi square= 17.65 df= 24)

*values of "drugs caused problems" variable
no drugs, no problem = 0
yes drugs, no problem = 2
yes drugs, yes problem = 1

Figure 5.
Fourth elaboration of causal process leading to drug use; unique effects among the "observed" measurement variables are introduced.

ESTEEM-ENHANCEMENT

Social sanctions was thought to increase later drug use (the group of prior use (36.7%) and finally to the group of nonusers at Time 1. Both the group of nonusers at Time 1 and with the theory of the esteem-enhancement model, throughout this paper, social sanctions can function for continued use. Finally, this construct can be found in the relation between early drug use and drug use in the future. The overall fit of the model was supported by the AGFI value of .996.

CONCLUSION

Findings from our study suggest an adequate support for the esteem-enhancement model. The results indicated that the drug use on later drug use. The findings, indicating that the early drug use in the model, are supported by the results obtained by subsequent research, such as social sanctions. The findings of negative self-worth, attitudes favoring non-drug use, and convergence with peers. These represent the model to drug use consistent with the model of deviance. The results are explained for later use in similar and substantiated application in both studies. The findings of the present study are consistent with the general findings of the theory. VEGE ET AL.

VEGA ET AL.

Figure 4.
Third elaboration of the causal process leading to drug use; the negative social sanction of drugs caused problems is introduced.
ESTEEM-ENHANCEMENT MODEL

...social sanctions was the most likely to increase later drug use (46.2%), followed by the group of prior users with no sanctions (36.7%) and finally the group who were nonusers at Time 1 and had no negative sanctions (only 7.5%). These results are consistent with the effects of negative social sanctions in the Kaplan et al. model and with the theoretical formulation of the esteem-enhancement model presented throughout this paper, in that negative social sanctions can function as a justification for continued deviant behavior. Finally, this construct mediates the relationship between earlier drug use and association with drug-using and drug-approving peers, and attenuates it to a statistically nonsignificant level.

The overall fit of the model is very good, as indicated by the chi-square value of 32.21 (42) with 24 degrees of freedom, and by the AGFI value of .996.

CONCLUSION

Findings from our longitudinal study suggest an adequate replication of the Kaplan, Johnson, and Bailey esteem-enhancement model. There are both direct and indirect effects of early adolescent drug use on later drug use in midadolescence, indicating that early drug use may be sustained net of other reinforcing social experiences in the model, but the effects of early drug use are far more likely to be mediated by subsequent social experiences such as social sanctions that produce feelings of negative self-worth, development of attitudes favoring unconventional behavior, and convergence with drug-using peers. These represent multiple pathways to drug use consistent with a general theory of deviance. The total variance explained for later adolescent drug use is similar and substantial (.45 and .42) in both studies. Five antecedent variables are used as causal factors and mediators to obtain this result. Therefore, the empirical model is efficient and, we believe, substantially conforms to the essential premises of the theory. We conclude that drug-using adolescents in the period between early and midadolescence do have social experiences and peer affiliations consistent with theory, and that these are related to continuing and new drug use behaviors.

We find an inherent operational ambiguity in the model stemming from the assumption that both early drug users and non-drug users who are experiencing self-rejection in early adolescence move through similar paths to later drug use. This occurs because the empirical model posits that "earlier drug use" is a statistical control variable and is, therefore, antecedent to all other model variables. However, drug users and non-drug users could be seen as theoretically discrete groups of adolescents. We cannot make a priori reject the possibility that personal adjustment and social context problems occurring in the drug-using and non-drug-using groups could alter the structural parameters of the model for both of them. A solution can be found in testing the model for each group independently. However, sample size inadequacy due to low base rates of drug use in early adolescence could render this approach difficult unless very large samples are available. These issues should be more fully explored in future research.

We underscore that our study used "drug use caused problems" as a variable mediating the relationship between antecedent variables of self-rejection and earlier drug use and theoretically dependent variables of disposition to deviance, drug-using peers, and later drug use. The original model uses negative social sanctions rather than drug-caused problems. Since "drug use caused problems" is more conceptually congruent and specific to the dependent variable of "later drug use," we are not surprised to see some differences in structural parameters between the two models. The mediating effect of "drug use caused problems" between earlier drug use and later drug use is stronger, as are the direct effects of "drugs caused problems" on "disposition to deviance" and "later drug use," when contrasted with the effects of "negative social sanctions" on...
those same paths in the original model. Although it may be arguable whether we have in fact achieved a true replication of the original model, we suggest that our model is consistent with the constructs and assumptions of the esteem-enhancement model and may be even more appropriate for predicting drug use.

We believe that the esteem-enhancement theory has utility for exploring the differential effects of race, cultural conflicts, and minority status on psychological adjustment. Self-esteem can have multiple antecedents as well as consequences. Childhood social experiences may contribute to the formation of negative self-concept among minority youth. We intend to elaborate the model to explore the effects of cultural conflicts among Latino adolescents as theoretically antecedent to self-rejection in order to address the issue of markedly higher delinquency and drug use among acculturated Latino adolescents (Gil, Vega, and Dimas 1994; Vega et al. 1993b). For African Americans, we intend to investigate the effects of perceptions of lower life chances and cultural mistrust (Biafore et al. 1993a; 1993b) on self-rejection, again in a time-ordered model. The delayed onset of drug use despite high levels of early adolescent delinquent behavior among African American adolescents may have important implications for the cross-cultural use of the model, or for its application in earlier and later developmental stages of adolescence (Vega et al. 1993c). These extensions of the esteem-enhancement model are indicative of the potential for a synthesis of explanatory theories that transcend the disciplinary boundaries of deviance theory and encompasses a wider conceptual base of social psychiatry and cross-cultural developmental psychology.

**APPENDIX**

*Time 1 Measures of Self-Rejection*

Self-Derogation $(\alpha = .74)$

I don't like myself as much as I used to.

At times I think I am no good at all. I wish I could have more respect for myself. I feel that I am a failure. I certainly feel useless at times. I used to be a better person than I am now. I feel I do not have much to be proud of. On the whole I am satisfied with myself. My life is a lot more satisfying now than it used to be. I am a better person now than I used to be. I like myself a lot better now than I used to. I take a positive attitude toward myself. Rejection by teachers $(\alpha = .79)$

Some of my teachers are usually not interested in what I say or do. My teachers feel that I am a failure. My teachers do not like me very much. My teachers usually put me down. Rejection by parents $(\alpha = .73)$

My parents do not like me much. My parents usually put me down. My parents have put me down for a long time. My parents are usually not very interested in what I say.

**Time 2 Measures of Disposition to Deviance**

Favorable attitudes toward deviant behavior $(\alpha = .62)$

It is okay to sneak into a movie or ball game without paying. It is okay to steal a bicycle if one can do it without getting caught. It is important to pay for all things taken from a store. It is important to try to follow rules and obey the law. The kids that mess around with the law seem to be better off than those that always follow the law. I don't care about other people's feelings. Unfavorable attitudes toward normative behavior $(\alpha = .78)$

I would like to quit school as soon as possible. I would like to leave home.

**Time 2 Measures of Drug Use Among Peers**

Approval of drug use $(\alpha = .88)$

How do you think your close friends feel about people who: (1) smoke marijuana; (2) use cocaine? Drug use by peers $(\alpha = .87)$

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**ESTEEM-ENHANCEMENT**

1. Smoke marijuana
2. Use cocaine

Illicit drug use at Time 1 attained by questions a...
ESTEEM-ENHANCEMENT MODEL

1. Smoke marijuana
2. Use cocaine
Illicit drug use at Time 1 and Time 3 was ascertained by questions asking about use of

(1) crack cocaine, (2) PCP, (3) uppers and downers, and (4) tranquilizers.

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mental health (Rogler

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This research was suppor
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PSYCHIATRY, Vol. 59, May 1996