

Personal Competence Skills, Distress, and Well-Being as Determinants of Substance Use in a Predominantly Minority Urban Adolescent Sample

Kenneth W. Griffin,^{1,2} Gilbert J. Botvin,¹ Lawrence M. Scheier,¹ Jennifer A. Epstein,¹ and Margaret M. Doyle¹

Several previous studies have investigated the relationship between psychological distress and substance use among youth. However, less research has investigated the potentially protective role of psychological well-being on adolescent substance use, and the extent to which personal competence skills may promote well-being. The present study examined personal competence skills, psychological distress and well-being, and adolescent substance use over a 3-year period in a predominantly minority sample of urban students ($N = 1,184$) attending 13 junior high schools in New York City. Structural equation modeling indicated that greater competence skills predicted less distress and greater well-being over time. Although psychological well-being was associated with less subsequent substance use, distress did not predict later substance use. Findings indicate that competence skills promote resilience against early stage substance use in part by enhancing psychological well-being, and suggest that school-based prevention programs should include competence enhancement components in order to promote resilience.

KEY WORDS: substance use; urban; minority; competence; well-being.

INTRODUCTION

Adolescence is an important transitional period marked by new social, academic, and vocational challenges in the lives of young people. Recently, experts in the field of adolescent development have begun to recognize that in addition to being a time of high risk for problem behaviors, adolescence is also a time of great opportunity for most young people (Lerner & Galambos, 1998). As outlined in a recent report by the National Research Council and Institute on Medicine (1999), the majority of adolescents are not at high risk for severe negative outcomes such as academic

failure, school dropout, alcohol and drug addiction, and problems with the law. Although all youth negotiate a variety of challenges during adolescence and do so with varying degrees of success, most are able to make adaptive decisions and set and achieve useful social and personal goals. Therefore, in addition to studying the risk factors for negative outcomes among youth, greater attention should be paid to the protective factors that enable most adolescents to succeed in developmental tasks and go on to become productive adult members of society.

Success and Failure in Developmental Tasks

The degree to which an adolescent is able to succeed at developmental tasks over the course of junior and senior high school is likely to play an important role in their developing sense of self. Over time, repeated successes in academic, interpersonal, or other important domains are apt to enhance a

¹Institute for Prevention Research, Weill Medical College of Cornell University, New York.

²Correspondence should be directed to Kenneth W. Griffin, Ph.D., MPH, Institute for Prevention Research, Department of Public Health, Weill Medical College of Cornell University, 411 East 69th Street, New York, New York 10021; e-mail: kgriffin@med.cornell.edu.

young person's sense of mastery, self-esteem, and sense of psychological well-being. Taken together, these processes may launch individuals on positive developmental trajectories into late adolescence and early adulthood. Conversely, repeated experiences with failure may lead to low self-esteem, poor self-confidence, feelings of hopelessness and distress, and other problems related to psychological adjustment. Indeed, research suggests that when adolescents adjust poorly to a development challenge such as the transition to middle school, it can decrease self-esteem and academic motivation and launch young people on trajectories that result in poor adjustment, limited achievement, and increased drug and alcohol use in later years (Eccles *et al.*, 1997). The transition into adulthood is likely to be more difficult for youth that struggle with these issues.

The developmental construct of competence is highly relevant to understanding the course of adolescent development because it plays a central role in whether youth succeed or fail at the tasks of adolescence. Competence has been described as "learned attitudes and aptitudes, manifested as capacities for confronting, actively struggling with, and mastering life problems through the use of cognitive and social skills" (Caplan, 1980). Youth with high levels of social and personal competence are likely to possess specific skills and abilities that enable them to successfully meet the demands and challenges of adolescence. For example, highly competent youth may have greater cognitive and behavioral self-management skills, and these factors can lead to more effective decision-making and task persistence. On the other hand, youth with poor social and personal competence skills are apt to feel overwhelmed when faced with new tasks, stressful circumstances, or daily hassles. This in turn may contribute to ineffective decision-making in which problems are solved using short-term, incomplete, or maladaptive solutions, including drug use and other problem behaviors.

Protective Role of Competence Skills

Although most adolescents go through their teenage years without major developmental problems, some must contend with negative psychosocial and behavioral outcomes such as mental health problems, unwanted teenage pregnancy, unsafe sexual activity, substance abuse, excessive risk-taking, and antisocial, delinquent, or criminal behavior (Lerner & Galambos, 1998). Several psychosocial theories have been developed to explain why these

negative outcomes occur among some youth. One of the most comprehensive explanatory models is Problem Behavior Theory (PBT; Jessor & Jessor, 1977). According to PBT, substance use, delinquency, and other problem behaviors are socially learned activities that are purposeful and functional from the adolescent's point of view. A basic tenet of PBT is that adolescents engage in problem behaviors in order to achieve social or personal goals that they are unable to achieve in more adaptive ways. That is, youth who do not possess the requisite skills and abilities to achieve desired developmental goals (e.g., acceptance by peers, attention from adults) will engage in problem behaviors because doing so is seen as a viable way of achieving what otherwise appear to be unattainable goals.

Several studies have shown that poor social and personal competence skills play a central role in the etiology of adolescent smoking (Botvin *et al.*, 1994; Epstein *et al.*, 2000a; Griffin *et al.*, 1999a), alcohol and other drug use (Botvin *et al.*, 1998; Epstein *et al.*, 2000b; Griffin *et al.*, 2000a; Scheier *et al.*, 1999; Scheier & Botvin, 1998), and interpersonal aggression and delinquency (Griffin *et al.*, 1999b). Furthermore, other studies suggest that youth may turn to substance use to regulate negative affect or alleviate feelings of stress, meaninglessness, or perceived powerlessness (Colder & Chassin, 1993; Crutchfield & Gove, 1984; Labouvie, 1986; Mainous *et al.*, 1996). This latter possibility is consistent with the self-medication hypothesis used to explain more serious levels of drug abuse behavior among drug-dependent individuals (Khanzian, 1997; Weiss & Mirin, 1987). Taken together, these studies suggest that poorly competent youth may experience greater levels of psychological distress that in turn contributes to substance use.

Conversely, youth with strong competence skills may achieve goals in an adaptive manner, making the prospect of engaging in problem behaviors less attractive and less useful. Success in developmental tasks may lead to a variety of positive psychological outcomes that serve a protective function for these youth. Successful youth may have a well-developed sense of personal mastery and empowerment that contributes to psychological well-being and high self-esteem. These factors may in turn reduce susceptibility to the forces that promote substance use and other problem behaviors. In summary, good competence skills and well-being may play key roles in positive youth development and help to protect youth from substance use and other problem behaviors.

Competence Skills and Resilience Among Urban Youth

Like the U.S. population at large, the adolescent population is becoming increasingly ethnically and racially diverse and will continue to do so for decades to come (National Research Council and Institute on Medicine, 1999). However, there has been little comparative research on normative developmental processes over the course of the teenage years for youth from different ethnic, cultural, and socioeconomic backgrounds. In particular, research is needed to increase our understanding of adolescent development among urban, minority youth in high-risk settings. In addition to the normative challenges of adolescence, minority youth from economically disadvantaged neighborhoods face a variety of additional problems such as exposure to crime and a lack of educational and occupational resources and opportunities (National Research Council, 1993). Yet despite this, most urban minority youth maneuver successfully through adolescence. The literature on resilience illustrates how youth raised in unfavorable environments manage to develop competence in a variety of life domains (Luthar & Zigler, 1991; Masten & Coatsworth, 1998), and this body of knowledge is clearly relevant to the experiences of many urban minority youth.

Personal competence skills may be an important component of resilience among youth in high-risk settings because highly competent youth can effectively use their skills and abilities to work toward current and future goals. Furthermore, because national (Johnston *et al.*, 2000) and regional (Epstein *et al.*, 1998, 1999; Griffin *et al.*, 2000b) survey data indicate that prevalence rates for adolescent problem behaviors differ according to ethnicity, it is important to determine if similar competence-based etiological models can account for the initiation and escalation of these behaviors among different ethnic/racial subgroups of youth. A recent study of White suburban youth (Griffin *et al.*, 2001) found that competence skills play a protective role in the etiology of adolescent substance use because competence enhances psychological well-being; a similar developmental mechanism was not observed for psychological distress. These findings provide insight into the protective mechanisms through which competence contributes to reduced substance use. However, it is not known if similar processes explain the protective effects of competence in minority youth or those in urban settings. There are a number of reasons why this hypothesized model may differ in an

urban minority sample relative to a suburban, White sample. First, substance use rates have been found to be lower or underreported among minority youth relative to White youth (e.g., Bauman & Ennett, 1994). Second, youth from economically disadvantaged urban neighborhoods often must contend with a number of environmental stressors that contribute to psychological distress, and therefore, the role of distress in the etiology of drug use may be more prominent in this group relative to suburban White youth. Thus, it is important to examine the assumptions of competence enhancement prevention approaches in diverse adolescent samples in order to justify the use of this approach in a variety of settings.

Goals of the Present Study

Based on the theoretical rationale outlined above, the present study focuses on the role of personal competence skills in adolescent substance use in a sample of predominantly minority urban youth. The relationships of personal competence with distress and well-being and how these variables may contribute to adolescent substance use are examined. We test the following hypotheses of developmental processes linking personal competence to substance use in early adolescence: (1) poor competence is associated with greater substance use over time through its effects on psychological distress, controlling for baseline levels of substance use; and (2) high competence is associated with less substance use over time through its effects on psychological well-being, controlling for baseline levels of substance use.

METHOD

Sample

Students from 13 schools in New York City served as untreated controls in a larger drug abuse prevention intervention trial (Botvin *et al.*, 2001) and these students were selected as participants for the present study. Recruitment of schools began by first obtaining permission from school district personnel, and then by individual school principals. Schools district personnel were approached in four boroughs of New York City: Manhattan, Bronx, Brooklyn, and Queens (Staten Island was excluded because it is largely White). Schools were eligible to participate if they were located in a predominantly minority community and had at least 75% minority students. The mean number of participants per school

was 89 (range = 10–381). All students in regular education 7th grade classrooms of participating schools were selected for inclusion in the study. Passive consent procedures were used. Most eligible students that did not participate were absent from school and the vast majority of students present in the classroom agreed to participate. A total of 1,184 participants completed surveys in the 7th, 8th, and 9th grades.³ The sample for the present study was predominantly Black (41%) and Hispanic (29%) with smaller numbers of students that were White (12%), Asian (9%), Native-American (1%) or of mixed or other ethnic-racial backgrounds. Participants were 60% female and 40% male. About 53% of participants lived in two-parent families and 39% lived in single parent families, with the remainder living with other guardians.

Procedure

Students completed a self-report questionnaire that assessed substance use behaviors and several psychosocial variables hypothesized to be associated with the initiation and escalation of substance use in adolescents. Unique identification codes were placed on each survey rather than student names in order to ensure confidentiality. Students were informed that their responses would not be made available to school personnel, teachers, or parents. Questionnaires were administered during a regular classroom period by a team of several data collectors that were of the same ethnic groups as participants. The research protocol and consent procedures were reviewed and approved by the Institutional Review Board at Cornell Medical College.

Measures

Latent factors of Personal Competence Skills, Psychological Well-Being, Psychological Distress, and Substance Use were constructed to test the hypothesized models. Scale reliabilities were calculated using Cronbach alphas where appropriate, and are provided ahead.

³From an original sample of 1,685 students who completed surveys during each year of the three-year study, 501 cases with 50% or more missing data were eliminated from further analyses. For the remaining 1,184 participants, a full-information, maximum likelihood, regression-based procedure was used to impute the remaining missing data points.

Personal Competence Skills

Personal competence as defined in the current study refers to skills related to cognitive and behavioral self-regulation. Thus the construct is more focused than other broader conceptualizations of competence (e.g., Masten & Coatsworth, 1998), and differs from other specific definitions of competence such as social competence and academic competence. The three indicators of Personal Competence Skills consisted of summary scores from scales measuring Decision-Making, Self-Reinforcement, and Self-Regulation skills. These indicators were chosen to represent important self-management strategies that are both cognitive (e.g., decision-making) and behavioral (e.g., self-regulation). Five items ($\alpha = .87$) from the Coping Assessment Battery (Bugen & Hawkins, 1981) were used to measure Decision-Making skills. This scale assesses cognitive strategies pertaining to information gathering and applied decision-making that individuals utilize when confronted with a specific problem. Sample items include “I think about the choices that exist before I take any action” and “I think about the possible consequences of each alternative.” Response categories ranged from 1 (*never*) to 5 (*almost always*). Five items ($\alpha = .83$) from the Frequency of Self-Reinforcement Attitudes Questionnaire (Heiby, 1983) were used to assess Self-Reinforcement skills. These items assess self-statements one makes to reinforce one’s own behavior, such as “I silently praise myself even for small achievements” and “The way I achieve my goals is by rewarding myself every step along the way.” Response categories ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Five items ($\alpha = .84$) from the Rosenbaum Self-Control Schedule (SCS; Rosenbaum, 1980) were used to measure Self-Regulation skills. The SCS measures cognitive strategies that individuals may use in specific situations to manage anxiety or distress, such as “If I am feeling sad, I try to think about pleasant things” or “I try to change the way I feel about things by changing the way I think about them.” Response categories ranged from 1 (*never true*) to 5 (*almost always true*).

Psychological Distress and Well-Being

Six items from the Mental Health Inventory (MHI; Veit & Ware, 1983) were used to assess affective functioning. The MHI was developed to assess symptoms of psychological distress and well-being in

community samples. Veit and Ware (1983) reported obtaining two factors reflecting psychological distress and positive well-being. In previous research, we have found that the MHI items form a two-factor solution, with items loading separately on a Distress factor or Well-Being factor (Griffin *et al.*, 2001). Also, other research examining psychological health among adolescents has found that well-being and distress are best conceptualized as two different but related dimensions (Wilkinson & Walford, 1998). Thus, Distress and Well-Being were specified as separate latent factors in the present study. The Distress latent factor consisted of three indicator items: "I felt downhearted and sad," "I felt moody and brooded about things," and "I felt anxious and worried." The Well-Being latent factor consisted of three indicator items: "I felt relaxed and free of tension," "I generally enjoyed the things that I did," and "I felt cheerful and lighthearted." Response categories ranged from 1 (*none of the time*) to 5 (*most of the time*), and students were asked to consider a time frame specified over the last month. Cronbach alphas for the Psychological Distress and Well-Being scales were .74 and .80, respectively.

Substance Use

Indicators of cigarette, alcohol, and marijuana use were used to reflect a latent construct of Substance Use. A cigarette use composite score was created based on the mean of two items that assessed frequency of smoking from 1 (*never*) to 9 (*more than once a day*), and the quantity of cigarettes generally smoked from 1 (*none at all*) to 8 (*more than two packs a day*). A composite score of alcohol involvement was created based on three items that assessed the frequency of drinking, the amount generally consumed at each drinking occasion, and frequency of getting drunk. For the frequency of drinking and drunkenness items, response options ranged from 1 (*never*) to 9 (*more than once a day*), and the drinking quantity item had response options from 1 (*I don't drink*) to 6 (*more than 6 drinks*) per drinking occasion. A marijuana use composite score was created based on the mean of two that assessed frequencies of marijuana use and of "getting high" from marijuana on a scale from 1 (*never*) to 9 (*more than once a day*). Since the distributions of the resulting substance use composite variables were moderately skewed (due to low base rates particularly in the 7th grade), each summary score was transformed logarithmically (e.g., Tabachnick & Fidell, 1989).

Data Analysis

Testing of the hypothesized structural models proceeded in a stepwise manner. A confirmatory factor analysis (CFA) model was tested to determine the psychometric adequacy of the hypothesized measurement model. Next, a structural equation model (SEM) was tested to examine the longitudinal relationships between early competence, affective functioning, and later substance use. In this model, the distress and well-being constructs were examined together in a single model as potential mediators of the competence—substance use relationship, controlling for baseline substance use. The EQS computer program (Bentler, 1995) was used for the confirmatory and structural analyses.

In evaluating the overall goodness-of-fit for the CFA and SEM models, the following criteria were used: (1) the χ^2 *p*-value, which if $p > .05$ indicates that there are no statistically significant discrepancies between the observed data and the hypothesized model; (2) the Comparative Fit Index (CFI), which specifies the amount of covariation in the data that is accounted for by the hypothesized model relative to the null model, adjusting for the sample size (a cutoff of .90 is generally accepted as indicating a good fit, where 1.0 indicates a perfect fit); (3) the standardized root mean squared residual (SRMR), which should be less than .05; and (4) the χ^2 to degree of freedom ratio, which should be less than 5.0 (Bollen, 1989).

RESULTS

An analysis of lifetime substance use prevalence rates revealed that in the 7th grade, 17% of students reported smoking cigarettes, 32% reported alcohol use, and 3% reported marijuana use. By the 9th grade, these rates were substantially higher, 29% of students reported smoking cigarettes, 45% reported alcohol use, and 18% reported marijuana use. Descriptive statistics for the observed variables are shown in Table 1, along with the intercorrelations among measured variables. Correlations revealed that measures of personal competence skills were moderately intercorrelated and moderately associated with subsequent well-being, but somewhat less strongly related to subsequent distress.

Attrition analyses revealed that approximately 33% of the initial sample did not complete the follow-up assessment in the 9th grade. This is similar to overall attrition rates for similar studies conducted

Table 1. Correlations Among Measured Indicators

	1	2	3	4	5	6	7	8	9	10	11
7th grade											
1. Decision-making	—										
2. Self-reinforcement	.412	—									
3. Self-regulation	.480	.512	—								
4. Alcohol	-.167	-.118	-.086	—							
5. Cigarettes	-.156	-.044	-.100	.473	—						
6. Marijuana	-.063	-.058	.019	.392	.265	—					
8th grade											
7. Well-being	.164	.144	.147	-.078	-.041	-.010	—				
8. Distress	-.058	-.081	-.007	.128	.131	.013	-.113	—			
9th grade											
9. Cigarettes	-.125	-.101	-.053	.365	.222	.075	-.101	.151	—		
10. Alcohol	-.121	-.095	-.018	.323	.376	.132	-.130	.132	.558	—	
11. Marijuana	-.095	-.098	-.035	.269	.204	.190	-.081	.018	.555	.55	—
Mean	2.96	2.70	2.71	0.78	0.81	0.71	3.28	2.67	0.89	0.95	0.82
SD	0.83	0.69	0.68	0.21	0.21	0.09	0.85	0.81	0.37	0.34	0.33

Note. Correlations greater than $|\text{.057}|$ are significant, $p < .05$.

in middle and junior high schools (Hansen *et al.*, 1985). Additional analyses showed that students who dropped out were somewhat more likely to smoke cigarettes and marijuana at baseline relative to those who remained in the study: 23% of those who had ever-smoked cigarettes in the 7th grade dropped out compared to 17% of never-smokers, $\chi^2(1) = 10.9$, $p < .001$; and 9% of those who had ever-used marijuana in the 7th grade dropped out compared to 4% of never-users, $\chi^2(1) = 17.2$, $p < .001$. Thus, because the possible range of some of the substance use outcome variables may have been restricted, the parameter estimates may in fact be conservative.

Confirmatory Factor Analysis (CFA)

As shown in Fig. 1, a CFA model was tested that consisted of the five latent factors, with each latent factor containing three indicators. The Personal Competence Skills latent factor consisted of three indicators of decision-making, self-reinforcement, and self-regulation skills; the Psychological Distress and Well-Being latent factors each had three single-item indicators; and the Substance Use latent factor consisted of the indicators of cigarettes, alcohol, and marijuana use. Factor loadings for the CFA (shown in Fig. 1) were in the expected direction and were statistically significant ($p < .0001$), indicating that the measurement model was properly specified. According to the goodness-of-fit criteria, the fit of the CFA model was adequate, $\chi^2(80, N = 1,184) = 378.7$, $p < .001$, CFI =

.932, SRMR = .048, $\chi^2/df = 4.7$.⁴ The latent factor intercorrelations from the CFA model are shown in Table 2. All factors were moderately to strongly intercorrelated, and the patterns of intercorrelations were in the expected directions. In summary, the CFA analysis demonstrated that the measurement model was adequate, with high factor loadings for all indicator variables and good fit indices.

Structural Equation Models

The SEM model tested the influences of competence, distress, and well-being on substance use within a single multivariate framework, controlling for developmental change in drug use. As shown in Fig. 2, this model included two exogenous latent factors (Personal Competence Skills and Substance Use in the 7th grade), two mediational latent factors (Psychological Distress and Well-Being in the 8th grade), and the outcome factor of Substance Use in the 9th grade. By including baseline drug use, we could examine whether early Personal Competence Skills, Distress, and/or Well-Being predicted *changes* in subsequent Substance Use. The model provided a good fit to the data, $\chi^2(80, N = 1,184) = 378.7$, $p < .001$, CFI = .932, SRMR = .048, $\chi^2/df = 4.7$.

⁴The $\chi^2 p$ -value is often used to evaluate whether there are statistically significant discrepancies between the observed data and the hypothesized model. Although the $\chi^2 p$ -value was significant in this model, indicating that additional models could be fit to the data, this is not uncommon with large models and large sample sizes (e.g., Marsh *et al.*, 1988).

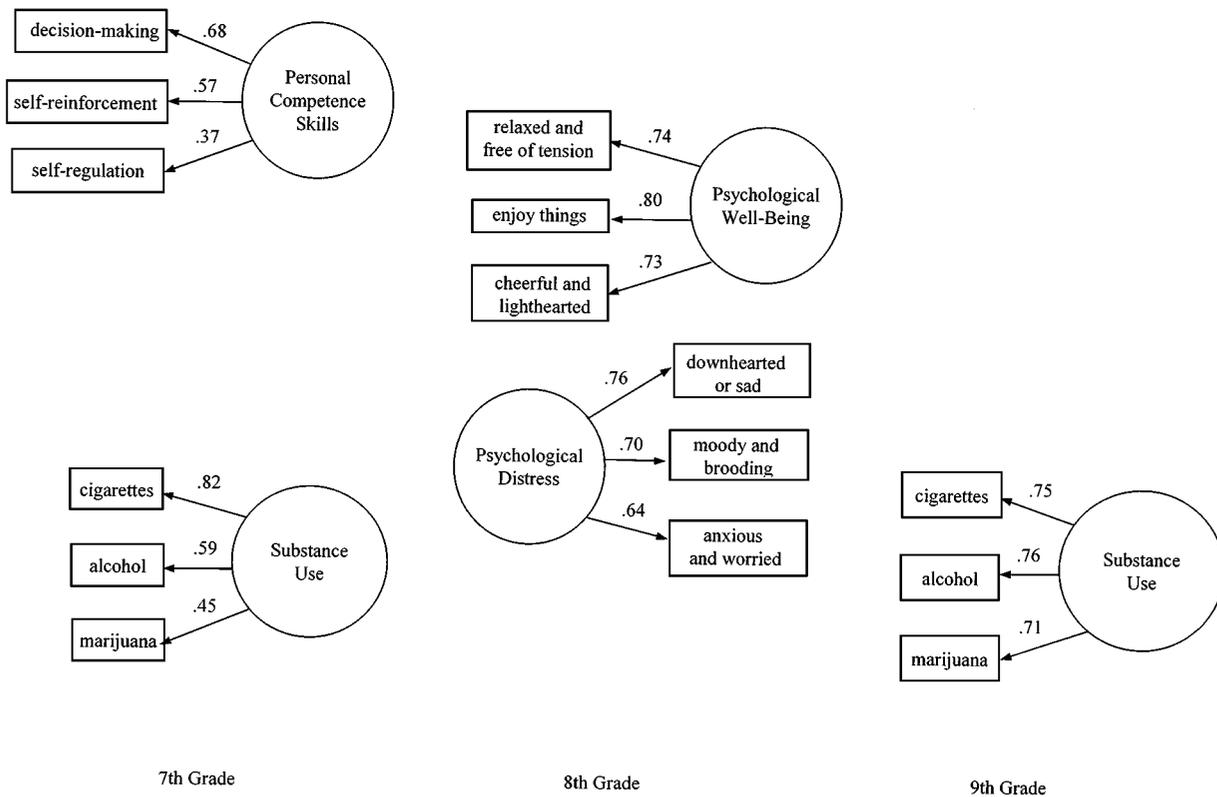


Fig. 1. Confirmatory factor analysis model of personal competence, well-being, distress, and substance use. *Note.* All factor loadings are statistically significant, $p < .001$.

Several findings are worth noting in the final model. First, Personal Competence Skills and Substance Use were inversely related in the 7th grade and shared almost 10% of variance ($r = -.31, p < .001$). Second, Personal Competence Skills in the 7th grade were somewhat more strongly predictive of later Psychological Well-Being ($r = .29, p < .001$) relative to later Psychological Distress ($r = -.17, p < .001$). Third, in terms of the developmental relationship over time, Personal Competence Skills sig-

nificantly predicted later Psychological Well-Being, which in turn predicted less later Substance Use ($\beta = -.08, p < .05$), controlling for baseline levels of Substance Use. Thus, Psychological Well-Being partially mediated the relationship between early Personal Competence Skills and later Substance Use. Fourth, although early Substance Use predicted later Psychological Distress, Psychological Distress did not predict later Substance Use. Finally, the model as a whole explained 30% of the variance in Substance Use in the 9th grade.

Table 2. Correlations Among Latent Factors From Confirmatory Factor Analysis

	1	2	3	4	5
7th grade					
1. Competence skills	—				
2. Substance use	-.310	—			
8th grade					
3. Well-being	.289	-.091*	—		
4. Distress	-.207	.176	-.156	—	
9th grade					
5. Substance use	-.254	.535	-.148	.161	—

Note. All correlations are significant at $p < .001$, except * $p < .05$.

In order to examine the effects of minority status in the hypothesized model, a multigroup structural equation model was examined for Black youth and Hispanic youth, the two largest racial-ethnic groups in the sample. Findings indicated that the paths between constructs were identical for both groups with the exception of the stability path from early to later substance use, which was significantly stronger for Hispanic youth ($\beta = .617$) relative to Black youth ($\beta = .333$), $\chi^2_{\text{difference}}(1) = 20.2$. With the exception of this path, the final model for the entire sample was observed as well for the Hispanic and Black subgroups

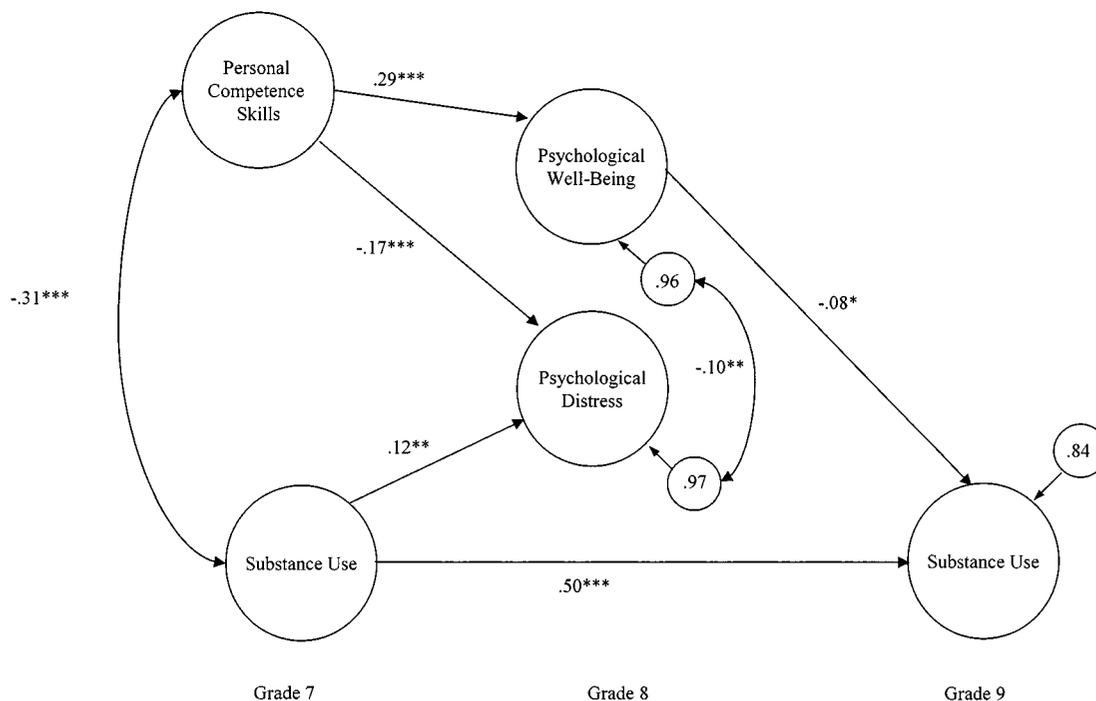


Fig. 2. Structural model of personal competence, well-being, distress, and substance use. *Note.* * $p < .05$; ** $p < .01$; *** $p < .001$; only significant paths are shown.

of youth. However, because the sample sizes for Black and Hispanic youth were relatively small when examined individually, two paths became marginally significant in the subgroup analyses due to decreased power.

DISCUSSION

The present study examined personal competence skills, distress, and well-being as predictors of adolescent substance use over a 3-year period in a sample of predominantly minority youth. Although previous research has examined the independent roles of competence and affect in adolescent substance use, few studies have integrated these variables into a single etiologic model. However, models that include both factors may be most appropriate due to the sometimes volatile nature of the early teenage years. A hypothesis of the present study was that highly competent adolescents benefit from positive affective outcomes that may serve a protective role in terms of adolescent substance use. This hypothesis has been shown to accurately describe the development of substance use in a sample of suburban, predominantly White youth (Griffin *et al.*, 2001), and the present findings

show a similar protective role of competence skills and well-being in a sample of predominantly minority urban youth.

Recent research suggests that it is useful to investigate the roles of both positive and negative affect in adolescent substance use (e.g., Wills *et al.*, 1999). In the present study, distress and well-being were examined as separate but related constructs. This distinction proved to be important in that distress and well-being were associated with substance use in different ways, rather than operating simply as opposite ends of a continuum. One hypothesis in the present study was that youth reporting high levels of psychological distress would attempt to offset negative emotions through substance use. This hypothesis is based on a coping or self-medication approach that has been used to explain more serious levels of drug use (Khanzian, 1997; Weiss & Mirin, 1987). However, findings indicated that distress did not significantly predict later substance use. The hypothesis that adolescents initiate substance use in an attempt to cope with distress was not supported in the present study. On the contrary, substance use was found to predict later distress. This is consistent with previous findings that adolescent drug use can contribute to negative outcomes and increased psychological symptoms (e.g., Johnson

& Kaplan, 1990). However, levels of distress and drug use were low in the present study, therefore participants may not have been sufficiently distressed to resort to drug use. Adolescents with higher levels of distress or substance use might display a stronger relationship between distress and substance use, as has been shown in studies of clinical populations of youth (e.g., Greenbaum *et al.*, 1991). Furthermore, rather than using substances to cope, some adolescents may engage in alcohol and drug use primarily for social reasons, and substance use for such individuals should not be expected to be related to distress or coping processes (Cooper *et al.*, 1988).

Given the prominent relationship between competence skills and well-being found in the present study, psychological well-being may play an important role in the development of resilience among high risk youth during early adolescence. According to Rutter (1987), resilience is a *protective process* that occurs at key points in people's lives, and successful task accomplishments that promote self-esteem and self-efficacy are an important part of this process. Resilience may develop in part through a repetitive process of task successes, perceived mastery, and self-efficacy beliefs that become mutually reinforcing. In turn, positive self-evaluations may contribute to enhanced well-being and feelings of satisfaction and happiness that serve as a barrier against substance use and other problem behaviors. The findings from the present study suggest that young people who benefit from this type of internal self-reinforcement have reduced motivation to smoke, drink, or use marijuana. Furthermore, this appears to be true for both suburban White youth (Griffin *et al.*, 2001) and, as shown in the present study, with urban minority youth.⁵ These findings indicate that the basic relationships among competence, distress, well-being, and substance use appear to be similar across racial-ethnic groups.

The fact that well-being mediated the relationship between competence skills and substance use (and distress did not) both in the present study of predominantly minority urban youth as well as the earlier study of suburban White youth is an important

finding with implications for prevention. The findings suggest that competence enhancement is an effective approach for the prevention of substance use among urban minority youth and suburban White youth, and may work in a similar fashion across different racial-ethnic groups. Competence enhancement approaches teach adolescents a combination of resistance skills and a variety of personal self-management skills and general social skills that attempt to decrease intrapersonal motivations to smoke, drink, or use illicit drugs and target a broad array of risk and protective factors (Botvin & Griffin, 2000). Competence enhancement based interventions focus on providing students with strategies to manage and control their behavior in classroom situations, help them to gather informational resources, and solve problems more efficiently and confidently. Rigorous evaluation studies have shown that drug abuse prevention approaches emphasizing competence enhancement are effective both in suburban White samples (e.g., Botvin *et al.*, 1995, 2000) and in urban minority youth (Botvin *et al.*, 1999, 2001). Although not tested directly in this study, the present findings suggest that intervention programs that enhance personal competence skills might promote feelings of perceived self-efficacy and psychological well-being. Thus, this approach may have important preventive effects not only in terms of substance use and other problem behaviors, but may also promote mental health (Weissberg *et al.*, 1991).

This study has several limitations that should be noted. First, because this was a school-based study that relied on students' self-reports, the significant relationships among variables may partly reflect shared method variance. Second, several important predictors of adolescent drug use were not included in the model, such as peer influences. Nevertheless, the final model was derived from theory and the findings are parsimonious. Third, the relatively high rates of attrition among substance users may have resulted in more conservative parameter estimates, and it is unclear if the present findings are generalizable to those youth that engage in the highest levels of substance use. Fourth, it is likely that highly distressed students were under-represented in the present sample, which might explain the weak relationships between distress and other measures. Fifth, our measures of distress and well-being were limited to how participants felt over the past month. Further research should examine trait measures of affectivity and how they are related to competence and substance use. Sixth, the magnitude of the relationship between well-being and substance

⁵However, the final model in the present study is not an exact replication of the earlier study of suburban White youth for several reasons. First, the indicators of competence were not identical across studies. Second, the strength of the relationships appear to be weaker in the present sample relative to the study of suburban White youth, perhaps due to lower rates of substance in the present sample compared to the suburban White sample. This explains why the same set of longitudinal control variables were not included in the present model.

use in the final model was not strong, albeit statistically significant. Finally, the focus of the present study was largely on individual-level psychosocial variables and some critical environmental variables (e.g., neighborhood and family factors) were not included.

Future research should attempt to identify the circumstances in which psychological distress is associated with adolescent substance use, whether substance use occurs at a certain threshold of distress, and whether the relationships between distress and substance use observed in clinical samples extend to nonclinical, population-based samples. It is also important for future research to examine if personal competence skills and well-being protect youth from delinquency, aggression, and other problem behaviors in addition to substance use. Finally, evaluation research should examine whether competence enhancement prevention programs that increase personal competence skills lead to increased psychological well-being that helps protect youth from negative health and behavioral outcomes.

ACKNOWLEDGMENTS

This research was supported by grants DA07656-06 and DA13015-01 from the National Institute on Drug Abuse.

REFERENCES

- Bauman, K. E., & Ennett, S. E. (1994). Tobacco use by Black and White adolescents: The validity of self-reports. *American Journal of Public Health, 84*, 394–398.
- Bentler, P. M. (1995). *EQS structural equations program manual*. Encino, CA: Multivariate Software.
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York: Wiley.
- Botvin, G. J., Baker, E., Dusenbury, L. D., Botvin, E. M., & Diaz, T. (1995). Long-term follow-up results of a randomized drug abuse prevention trial in a white middle-class population. *Journal of the American Medical Association, 273*, 1106–1112.
- Botvin, G. J., Epstein, J. A., Schinke, S. P., & Diaz, T. (1994). Predictors of smoking among inner-city minority youth. *Journal of Developmental and Behavioral Pediatrics, 15*, 67–73.
- Botvin, G. J., & Griffin, K. W. (2000). Preventing substance use and abuse. In K. Minke & G. Bear (Eds.), *Preventing school problems—promoting school success: Strategies and programs that work* (pp. 259–298). Bethesda, MD: National Association of School Psychologists.
- Botvin, G. J., Griffin, K. W., Diaz, T., & Ifill-Williams, M. (2001). Drug abuse prevention among minority adolescents: One-year follow-up of a school-based prevention intervention. *Prevention Science, 2*, 1–13.
- Botvin, G. J., Griffin, K. W., Diaz, T., Miller, N., & Ifill-Williams, M. (1999). Smoking initiation and escalation in early adolescent girls: One-year follow-up of a school-based prevention intervention for minority youth. *Journal of the American Medical Women's Association, 54*, 139–143.
- Botvin, G. J., Griffin, K. W., Diaz, T., Scheier, L. M., Williams, C., & Epstein, J. A. (2000). Preventing illicit drug use in adolescents: Long-term follow-up data from a randomized control trial of a school population. *Addictive Behaviors, 5*, 769–774.
- Botvin, G. J., Malgady, R. G., Griffin, K. W., Scheier, L. M., & Epstein, J. A. (1998). Alcohol and marijuana use among rural youth: Interaction of social and intrapersonal influences. *Addictive Behaviors, 23*, 379–387.
- Bugen, L. A., & Hawkins, R. C. (1981). *The Coping Assessment Battery: Theoretical and empirical foundations*. Paper presented at the meeting of the American Psychological Association, Los Angeles, CA.
- Caplan, G. (1980). An approach to preventive intervention in child psychiatry. *Canadian Journal of Psychiatry, 25*, 671–682.
- Colder, C. R., & Chassin, L. (1993). The stress and negative affect model of adolescent alcohol use and the moderating effects of behavioral undercontrol. *Journal of Studies on Alcohol, 54*, 326–333.
- Cooper, M. L., Russell, M., & George, W. H. (1988). Coping, expectancies, and alcohol abuse: A test of social learning formulations. *Journal of Abnormal Psychology, 97*, 218–230.
- Crutchfield, R. D., & Gove, W. R. (1984). Determinants of drug use: A test of the coping hypothesis. *Social Science and Medicine, 18*, 503–509.
- Eccles, J. S., Lord, S. E., Roeser, R. W., Barber, B. L., & Jozefowitz, D. M. (1997). The association of school transitions in early adolescence with developmental trajectories through high school. In J. Schulenberg, J. L. Maggs, & K. Hurrelman (Eds.), *Health risks and developmental transitions during adolescence*. Cambridge: Cambridge University Press.
- Epstein, J. A., Botvin, G. J., & Diaz, T. (1998). Ethnic and gender differences in smoking prevalence among a longitudinal study of inner-city adolescents. *Journal of Adolescent Health, 23*, 160–166.
- Epstein, J. A., Botvin, G. J., Griffin, K. W., & Diaz, T. (1999). Role of ethnicity and gender in polydrug use among a longitudinal sample of inner-city adolescents. *Journal of Alcohol and Drug Education, 45*, 1–12.
- Epstein, J. A., Griffin, K. W., & Botvin, G. J. (2000a). Competence skills help deter smoking among inner-city adolescents. *Tobacco Control, 9*, 33–39.
- Epstein, J. A., Griffin, K. W., & Botvin, G. J. (2000b). Role of general and specific competence skills in alcohol use among inner-city adolescents. *Journal of Studies on Alcohol, 61*, 379–386.
- Greenbaum, P. E., Prange, M. E., Friedman, R. M., & Silver, S. E. (1991). Substance abuse prevalence and comorbidity with other psychiatric disorders among adolescents with severe emotional disturbances. *Journal of the American Academy of Child and Adolescent Psychiatry, 30*, 575–583.
- Griffin, K. W., Botvin, G. J., Doyle, M. M., Diaz, T., & Epstein, J. A. (1999a). A six-year follow-up study of determinants of heavy cigarette smoking among high school seniors. *Journal of Behavioral Medicine, 22*, 271–284.
- Griffin, K. W., Botvin, G. J., Epstein, J. A., Doyle, M. M., & Diaz, T. (2000a). Psychosocial and behavioral factors in early adolescence as predictors of heavy drinking among high school seniors. *Journal of Studies on Alcohol, 61*, 603–607.
- Griffin, K. W., Scheier, L. M., Botvin, G. J., & Diaz, T. (2000b). Ethnic and gender differences in psychosocial risk, protection, and adolescent alcohol use. *Prevention Science, 1*, 199–212.
- Griffin, K. W., Scheier, L. M., Botvin, G. J., & Diaz, T. (2001). The protective role of personal competence skills in adolescent substance use: Psychological well-being as a mediating factor. *Psychology of Addictive Behaviors, 15*, 194–203.
- Griffin, K. W., Scheier, L. M., Botvin, G. J., Diaz, T., & Miller, N. (1999b). Interpersonal aggression in urban minority youth: Mediators of perceived neighborhood, peer, and parental influences. *Journal of Community Psychology, 27*, 281–298.

- Hansen, W. B., Collins, L. M., Malotte, C. K., Johnson, C. A., & Fielding, J. E. (1985). Attrition in prevention research. *Journal of Behavioral Medicine, 8*, 261–275.
- Heiby, E. M. (1983). Assessment of frequency of self-reinforcement. *Journal of Personality and Social Psychology, 44*, 1304–1307.
- Jessor, R., & Jessor, S. L. (1977). *Problem behavior and psychosocial development: A longitudinal study of youth*. San Diego, CA: Academic Press.
- Johnson, R. J., & Kaplan, H. B. (1990). Stability of psychological symptoms: Drug use consequences and intervening processes. *Journal of Health and Social Behavior, 31*, 277–291.
- Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (2000). *Monitoring the future national survey results on drug use, 1975–1999: Vol. 1. Secondary school students* (NIH Publication No. 00-4802). Rockville, MD: National Institute on Drug Abuse.
- Khanzian, E. J. (1997). The self-medication hypothesis of substance use disorders: A reconsideration and recent applications. *Harvard Review of Psychiatry, 4*, 231–244.
- Labouvie, E. W. (1986). Alcohol and marijuana use in relation to adolescent stress. *International Journal of the Addictions, 21*, 333–345.
- Lerner, R. M., & Galambos, N. L. (1998). Adolescent development: Challenges and opportunities for research, programs, and policies. *Annual Review of Psychology, 49*, 413–446.
- Luthar, S. S., & Zigler, E. (1991). Vulnerability and competence: A review of research on resilience in childhood. *American Journal of Orthopsychiatry, 61*, 6–22.
- Mainous, A. G., Martin, C. A., Oler, M. J., Richardson, E. T., & Haney, A. S. (1996). Substance use among adolescents: Fulfilling a need state. *Adolescence, 31*, 807–815.
- Marsh, J. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin, 103*, 391–410.
- Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist, 53*, 205–219.
- National Research Council. (1993). *Losing generations: Adolescents in high-risk settings*. Washington, DC: National Academy Press.
- National Research Council and Institute on Medicine. (1999). *Risks and opportunities: Synthesis of studies on adolescence. Forum on adolescence* (M. D. Kipke, Ed., Board on children, youth, and families). Washington, DC: National Academy Press.
- Rosenbaum, M. (1980). Schedule for assessing self-control behaviors. *Behavior Therapy, 11*, 109–121.
- Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry, 57*, 316–331.
- Scheier, L. M., & Botvin, G. J. (1998). Relations of social efficacy, personal competence, and adolescent alcohol use: A developmental exploratory study. *Journal of Early Adolescence, 18*, 77–114.
- Scheier, L. M., Botvin, G. J., Diaz, T., & Griffin, K. W. (1999). Social skills, competence, and drug refusal efficacy as predictors of adolescent alcohol use. *Journal of Drug Education, 29*, 253–280.
- Tabachnick, B. G., & Fidell, L. S. (1989). *Using multivariate statistics*. New York: Harper Collins.
- Veit, C. T., & Ware, J. E. (1983). The structure of psychological distress and well-being in general populations. *Journal of Consulting and Clinical Psychology, 51*, 730–742.
- Weiss, R. D., & Mirin, S. M. (1987). Substance abuse as an attempt at self-medication. *Psychiatric Medicine, 3*, 357–367.
- Weissberg, R. P., Caplan, M., & Harwood, R. L. (1991). Promoting competent young people in competence-enhancing environments: A systems-based perspective on primary prevention. *Journal of Consulting and Clinical Psychology, 59*, 830–841.
- Wilkinson, R. B., & Walford, W. A. (1998). The measurement of adolescent psychological health: One or two dimensions? *Journal of Youth and Adolescence, 27*, 443–455.
- Wills, T. A., Sandy, J. M., Shinar, O., & Yaeger, A. (1999). Contributions of positive and negative affect to adolescent substance use: Test of a bidimensional model in a longitudinal study. *Psychology of Addictive Behaviors, 13*, 327–338.