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Mediators between Coping Styles and Substance Use/Intentions in Urban, High School Freshmen

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Abstract

To explore what mediates relationships between coping styles and substance use, different types of coping, proximal precursors of substance use, and reported substance use/intentions to use were examined in a study of low income, urban, high school freshmen from American ethnic minority groups. Regression analyses showed evidence for two mediators. The relationship between a tendency to depend upon parents to cope with problems and increased substance use was mediated by lowered perceptions of harm from use. The relationship between a tendency to use substances to cope with problems and increased substance use was mediated by increased tolerance for and use by friends'.

Keywords

adolescents; substance use; coping styles; mediators; ethnic minorities; harm perception; friends' use

1. Introduction

Middle adolescence is an especially important time because teenagers, more than any other age group, are highly susceptible to engaging in high-risk behaviors, including experimentation with drugs (Johnston, O'Malley, Bachman, & Schulenberg, 2006). Researchers seeking to understand why some adolescents use more substances than others have discovered that the ways in which youth cope with stress account for considerable variance (Wills, 1985). Some coping styles, such as active problem-solving, can be protective against use while some styles, such as using substances to cope, are predictive of use. Other coping styles, such as seeking social support, are protective in some studies and predictive of use in others. Beyond these inconsistencies, another question exists. What processes or mechanisms mediate the relationships between coping styles and substance use? That is, how does the use of a particular

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coping style change a youth so that substance use becomes more or less likely? This study is designed to examine this question.

In the current study, we extend previous research by examining the relationships between coping styles and substance use in a sample of mostly minority adolescents attending a mid-Atlantic urban school and testing the notion that proximal precursors of substance use serve as mediators of these relationships. We were interested in exploring whether any of the previous findings concerning the relationships between coping styles and substance use will also be found in our sample of ninth graders dealing with the stresses of urban living and transitioning to high school. Our hypotheses were 1) coping via problem solving will be negatively associated with substance use, 2) coping via substance use will be predictive of substance use, and 3) known proximal precursors of substance use may mediate these relationships. Conflicting previous findings made it difficult to predict how coping via relying on a caretaker would relate to the probability of substance use.

2. Method

2.1 Participants

Participants included 128 high school freshmen (69 female, 59 male) attending an urban school in the northeastern United States. Approximately 64% of the school district's students are eligible for free lunch (Public School Review, 2006), which is above the state's average (25%). Forty-one percent of the participants identified their ethnicity as African American ($n=52$), 3.1% Caucasian ($n=4$), 46.1% Latino/Hispanic ($n=59$), 1.6% Asian American ($n=2$), and 8.6% ($n=11$) reported their ethnicity as "other." The age of participants ranged from 13 to 16 years, with a mean of 14.3 ($SD=.68$).

2.2 Procedure

Study procedures were approved by the university's Institutional Review Board and students participated at the end of their freshman year of high school under a passive parental consent procedure. Survey data were obtained through group administration of a battery of questionnaires including items on coping, precursors of substance use, substance use, and intentions to use drugs/alcohol. English and Spanish versions of the questionnaire were available to all students. To protect the students' right to confidentiality, questionnaires were labeled only with a code number and students were instructed not to write their names on the survey. At the time of the survey, students were also told that they could refuse to participate at any time without facing negative consequences.

2.3 Measures

2.3.1 Demographic variables—Participants reported their sex, age and ethnicity. For this study, the variable of ethnicity was dichotomized into two categories, "African American" and "Other," with the latter including all participants who did not indicate that they were African American.

2.3.2 Coping styles—Coping styles initially were measured via a 15-item self-report questionnaire from a previous study (Pandina, Labouvie, & White, 1984). Students were instructed to respond on a five-point scale as to "when you experience problems, stress or anger, how often do you..." Items included "think of different possible ways to deal with the problem;" "have an alcoholic drink, smoke marijuana, or take other drugs." In an effort to broaden the scope of the measure, we examined items from the entire battery of questionnaires and found an additional three items that we believed might also measure aspects of coping. These items included "how often do you let your caretaker cheer you up when you are sad or worried." Reverse scoring was computed where appropriate.

In order to reduce the 18 items to fewer domains, we conducted a principal components analysis with varimax rotation. Three components were extracted, which accounted for 48% of the variance. Seven *problem solving* items loaded on the first component ($\alpha=.81$). Three *relying on caretaker* items loaded on the second component ($\alpha=.76$). Lastly, two *coping via substance use* items loaded on the third component ($\alpha=.72$).

2.3.3 Substance use/intentions to use and their precursors—To develop substance use-related scales, a set of 51 items believed to measure substance use/intentions to use or their precursors were analyzed using principal components analysis with varimax rotation. Items were drawn from a survey by Pandina et al. (1984) and included self reports of substance use, intentions to use substances, perceptions of harm from substance use, friends' use of alcohol and drugs, and tolerance for friends' use of alcohol and drugs. Items on expectancies of effects of alcohol and marijuana use were drawn from a survey by Fromme, Stroot, and Kaplan (1993). Again, reverse scoring was computed where appropriate.

Five components were extracted, which accounted for 59% of the variance. Eleven *perceptions of harm* items loaded on the first component ($\alpha=.96$). Twelve *negative alcohol/marijuana expectancies* items loaded on the second component ($\alpha=.92$). Eleven *positive alcohol/marijuana expectancies* items loaded on the third component ($\alpha=.90$). Five *friends' substance use and tolerance for it* items loaded on the fourth component ($\alpha=.89$). Eleven *substance use/intentions to use* items loaded on the fifth component ($\alpha=.83$).

3. Results

3.1 Multiple Regression Analyses

We used multiple regression analyses to test whether precursors of substance use partially mediate the relationships between coping styles and substance use. The test of joint significance was used to examine evidence of mediation. As stated by MacKinnon, Lockwood, Hoffman, West, and Sheets (2002), “the test of joint significance simultaneously tests whether the independent variable is related to the intervening variable and whether the intervening variable is related to the dependent variable” (p. 87). If both relationships are found to be statistically significant, then there is evidence for mediation.

First, to test for relationships between coping styles, gender, and potential mediating variables, a series of multiple regression analyses was conducted in which each potential mediator was regressed, one at a time, on gender, coping via problem solving, coping via reliance on caretaker, and coping via substance use (Block 1). To examine whether gender moderated the relations between any of the coping styles and potential mediators, Block 2 included interactions of each coping style with gender. Interaction terms did not significantly change the R^2 value and thus, will not be discussed further. Ethnicity was not included in the regression analyses because it did not significantly correlate with any other study variable.

3.2.1 Negative alcohol/marijuana expectancies—In Block 1, the model as a whole accounted for 8.0% of the variance, $R^2=.080$, $F(4,121)=2.62$, $p < .05$. Coping via substance use made a significant negative unique contribution to negative alcohol/marijuana expectancies when effects of the other variables were controlled statistically ($\beta=-.22$, $p < .05$). Additionally, coping via problem solving made a significant positive unique contribution to negative alcohol/marijuana expectancies ($\beta=.21$, $p < .05$).

3.2.2 Positive alcohol/marijuana expectancies—In Block 1, the model as a whole accounted for 7.9% of the variance, $R^2=.079$, $F(4,121)=2.59$, $p < .05$. After the effects of other variables were controlled, coping via reliance on caretaker made a significant positive unique

contribution to positive alcohol/marijuana expectancies ($\beta=.22, p < .05$). Coping via support from caretaker explained 4.3% of the variance in positive expectancies.

3.2.3 Friends' use and tolerance for it—In Block 1, the model accounted for 7.9% of the variance, $R^2=.079, F(4,119)=2.54, p < .05$. Coping via substance use made a significant positive unique contribution to friends' use and tolerance for it when effects of the other variables were controlled statistically ($\beta=.21, p < .05$).

3.2.4 Perception of harm—In Block 1, the model as a whole accounted for 7.6% of the variance, $R^2=.076, F(4,121)=2.50, p < .05$. Coping via reliance on caretaker made a significant negative unique contribution to perception of harm from substance use when effects of the other variables were controlled statistically ($\beta=-.22, p < .05$).

3.2.5 Substance use/intentions to use—This model as a whole accounted for 45% of the variance, $R^2=.45, F(8,115)=11.91, p < .001$. After controlling for all other variables, the relationship between friends' use and tolerance for it and substance use/intentions to use was significant ($\beta=.35, p < .001$), as was the relationship between perception of harm from substance use and substance use/intentions to use ($\beta=-.25, p < .01$). The relationship between coping via substance use and substance use/intentions to use was also significant ($\beta=.39, p < .001$).

As shown in Figure 1, separate tests of each path related to perception of harm (i.e., coping via reliance on caretaker to perception of harm and perception of harm to substance use/intentions to use) are jointly significant. Additionally, separate tests of each path related to friends' use and tolerance for it (i.e., coping via substance use to friends' use and tolerance for it and friends' use and tolerance for it to substance use/intentions to use) are also jointly significant. Based on the specifications of the test of the joint significance described earlier (MacKinnon et al., 2002), these results provide evidence that perception of harm partially mediates the relationship between coping via reliance on caretaker and substance use/intentions to use. These results also provide evidence that friends' use and tolerance for it partially mediates the relationship between coping via substance use and substance use/intentions to use.

4. Discussion

In this study, we proposed to explain the variance in substance use and intention to use among urban ethnic minority adolescents by exploring whether proximal precursors of substance use mediate the relationships between specific coping styles and substance use. We found that coping styles, proximal precursors of use, and gender together accounted for 45% of the variance in substance use/intentions to use. These findings support the notion that a strong relationship exists between individual coping styles, substance use precursors, and substance use in urban, ethnic minority youth.

Results of the regression analyses also provide evidence that decreased perception of harm from substance use, a known proximal precursor of substance use, mediates the relationship between coping via reliance on caretaker and substance use/intentions to use. The theory that would explain this relationship is not clear. One might speculate that the caretakers in families that reinforce reliance on them to solve problems may be substance users themselves. This hypothesis, however, is speculative and should be studied further.

Results of the regression models also provide evidence that increased friends' use and tolerance for it, a known proximal precursor of substance use, partially mediates the relationship between coping via substance use and substance use/intentions to use. We also found that coping via substance use was a strong direct predictor of substance use and intentions to use, accounting

uniquely for 13% of the variance. This is consistent with findings from previous studies (Wills et al., 2001). Thus, the current study provides further evidence to support the notion that coping via substance use is a maladaptive form of coping, as it may put individuals at risk for developing more regular substance use. We did not find evidence of gender or racial effects in our analyses.

4.1 Limitations and Future Directions

Though findings in the current study were notable, some limitations must be discussed. One limitation is that there was a restricted range of items from which to derive the coping styles, substance use, and precursors of use scales. A possible consequence of this circumstance is that some relevant coping styles may not have been tapped.

Because of the cross-sectional research design, we are unable to conclude whether use of maladaptive coping styles puts youth at risk for substance use or whether engagement in substance use leads them to develop maladaptive coping styles. Replication using longitudinal or prospective designs is necessary in order to understand further the directional or causal relationships among coping styles, proximal precursors, and substance use.

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Figure 1.

Significant pathways in model of relationships among coping styles, proximal precursors, and substance use/intentions to use. Values are standardized beta weights. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.