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RACE, COPING STRATEGIES, AND SUBSTANCE USE BEHAVIORS: A PRELIMINARY ANALYSIS EXAMINING WHITE AND AMERICAN INDIAN ADOLESCENTS

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Abstract

The association between stress exposure and substance use has been the subject of numerous studies. However, no prior study has explored the role of coping strategies in moderating the stress-substance use association for American Indian adolescents. Our preliminary study of coping strategies and substance use among a sample (n=568) of rural American Indian and white adolescents revealed a number of similarities across both groups, but also some important differences. Results of logistic regression analyses revealed that the relationship between an avoidant coping strategy and marijuana use differed for whites and American Indians. Study limitations and future research directions are discussed.

Keywords

American Indians; substance use behaviors; coping strategies; social stress; rural adolescents

Despite a wide variety of efforts to curb or reduce adolescent substance use, adolescent alcohol and drug use remain prominent behaviors among American teens. Recent research suggests that after years of apparent decline, some forms of adolescent drug use, such as marijuana and ecstasy, appear to be rising again (Johnston et al., 2012). Although adolescent use of other substances, including alcohol and cocaine, appears to be on the decline, *Monitoring the Future's* 2011 report (Johnston et al., 2012) indicated that 6.6% of 12th graders reported *daily* marijuana use—the highest rate since 1981 (see also SAMHSA, 2010). Data from the National Survey of Drug Use and Health (Wu et al., 2011) confirm these patterns and provide evidence that among adolescents aged 12 to 17, American Indians have the highest prevalence of past year alcohol or drug use with 15 percent of AIs, twice the national rate, meeting the criteria for a substance-related disorder.

One prominent explanation of adolescent substance use is the stress process or stress-coping model (Pearlin, 1989; Wills and Cleary, 1995). Research guided by the stress process/coping model examines the association between exposure to stressors in one's life and an array of adverse physical and mental health consequences, including substance use behaviors. The likelihood of experiencing adverse health outcomes as a result of cumulative stress exposure, however, may be conditioned by the presence (or absence) of a number of personal and social resources that essentially determine the extent to which an individual can manage the stress so that it does not produce adverse consequences. Coping strategies—the array of cognitive and behavioral strategies that people use to manage stress—have been

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associated with various health behaviors, including substance use (Lazarus and Folkman, 1984; Baer et al., 1987; Simons and Robertson, 1989; Sanchez et al., 2010; Cooper et al. 1988; Hasking and Oei 2004).

However, there have been relatively few studies that have examined whether this association between coping strategies and substance use behaviors applies to racial and ethnic minority members. As Compas and colleagues (2001) note, most studies of this association have depended upon samples of white respondents. While there have been some studies that have explored the association between coping strategies and substance use behaviors among certain racial and ethnic minority groups, we are aware of no published study to date that has specifically examined coping strategies with a sample of American Indian adolescents. Hence, the purpose of the present study is twofold: a) to conduct a preliminary study of the association between coping strategies and substance use behaviors among a sample (n=568) of American Indian and non-Hispanic white adolescents; and b) to examine whether there exists any differences in the association between coping strategies and substance use behaviors between American Indian and non-Hispanic white adolescents.

BACKGROUND

While coping has been defined in a number of ways (see Compas et al., 2001), one useful definition of coping was offered by Pearlin and Schooler (1978), which stated that coping is “any response to external life strains that serves to prevent, avoid, or control emotional distress” (p. 3). Although most definitions of coping capture similar notions, there exists less agreement regarding the various subtypes or typologies of coping strategies. One common typology identifies two broad dimensions to coping: problem-focused and emotion-focused strategies (Folkman and Lazarus, 1985). Problem-focused coping strategies capture efforts to alter the stressful environment and/or the consequences whereas emotion focused strategies encompass efforts aimed at palliating negative affect that is a result of the stress exposure (Compas et al., 2001). Additional work has suggested that a third broad category, avoidance-focused strategies, should also be incorporated (Billings and Moos, 1981; Amirkhan, 1990; Skinner, Edge, Altman, and Sherwood, 2003). While prior research often assumed that problem-focused coping was adaptive while emotion-focused and (especially) avoidance-focused strategies were maladaptive, more recent research has suggested that the association between coping strategies and health outcomes is more complex. This research has provided evidence that emotion-focused or avoidance-focused coping strategies may be protective for females (reducing depressed mood) and for African Americans or Hispanics (reducing problem drinking) (e.g., Compas et al., 2001; Howerton and Van Gundy, 2009; Richman et al., 2011).

Prior research has explored the association between coping strategies and a variety of substance use behaviors (e.g., Baer et al., 1987; Simons and Robertson, 1989; Sanchez et al., 2010; Cooper et al. 1988; Hasking and Oei 2004), with a number of studies finding that both emotion-focused and avoidant coping strategies are indeed predictive of alcohol and illicit drug behaviors (e.g., Cooper et al. 1992; Cooper et al., 1997; Hasking and Oei 2004; Johnson and Pandina, 2000; Simons and Robertson, 1989). But as mentioned earlier, many of these studies utilized samples of white, non-Hispanics—the association between coping strategies and substance use behaviors among racial and ethnic minorities is relatively underexplored. As Richman and colleagues (2011) recently noted:

“The assumption that certain responses are always ‘adaptive’ while other approaches are ‘maladaptive’ when dealing with stressors presents problems for those interested in understanding the relationships between stressors, coping, and mental health outcomes, including problematic drinking behaviors. It assumes homogeneity across all groups and suggests that what is adaptive for one group will

be similarly adaptive for other groups. In other words, this perspective ignores cultural, social or economic circumstances that may determine the consequences of using alternative modes of coping” (p. 402).

Extant research supports the notion that exposure to stressors and access to resources to manage stress exposure is stratified by one's structural position in American society, including race (Turner, Wheaton, and Lloyd, 1995; Turner and Lloyd, 2004; Link and Phelan, 1995; Thoits, 1995) and that such differences in social position are associated with mental and physical health differences (e.g., Lutfey and Freese, 2005; Mossakowski, 2008; Thoits, 1999). While few in number, there have been some studies that have examined the role of coping strategies and substance use behaviors among racial and ethnic minorities. In general, these studies have suggested that race and ethnicity matters when examining the association between coping strategies and substance use (e.g., Aldridge-Gerry et al., 2011). For example, one study found that avoidant coping strategies (e.g., escape, denial) and emotion-focused coping strategies are positively associated with alcohol use disorders among rural African-American women (Boyd et al., 2007), while another found that avoidant coping strategies were negatively associated with binge drinking and marijuana use among Asian-American males (Liu and Iwamoto, 2007). Richman and colleagues (2011) also examined race/ethnic differences in coping strategies and their association with another substance use behavior—problem drinking. Using measures from Carver's (1997) Brief COPE instrument, these authors found that denial and self-blame forms of coping, typically presumed to be maladaptive coping strategies, were actually protective against problem drinking among Blacks and Hispanic respondents (relative to whites). These authors argued that their findings illustrate the importance of evaluating the relationship between coping resources and substance use behaviors for various racial and social groups, instead of simply assuming that race and social position are unimportant.

While there are only a limited number of studies examining the role of race/ethnicity in the association between coping strategies and substance use behaviors, we are not aware of any published research that has examined this issue among American Indians (AIs). Walters, Simoni, and Evans-Campbell (2002) have discussed the potential of a stress-coping model to inform research on native health, but empirical research has yet to systematically test this thesis. However, there have been a few studies that have examined religious affiliation as a resource that may protect AIs from substance use. For instance, Yu and Stiffman (2007; 2010) found that religious affiliation was protective for alcohol abuse/dependence and illicit drug use among adolescent AIs.

Beyond the lack of empirical evidence regarding the association between coping strategies and substance use, there are additional compelling reasons to explore the relationship for AIs. First, a number of studies have found that AIs are at a heightened risk of stress exposure, relative to the general population (Manson et al., 1996; Manson et al., 2005; Evans-Campbell et al., 2006; LeMaster et al., 2002; Bullock and Bell, 2005). It is also a well-established finding that AI adolescents are at a heightened risk of such substance use behaviors as earlier onset of substance use, polydrug use, and abuse/dependence compared to the general population (e.g., Plunkett and Mitchell, 2000; Novins, Beals, and Mitchell, 2001; Young and Joe, 2009; Spicer et al., 2003; Beals et al., 2005, SAMHSA, 2005; Wu et al. 2011). This is not surprising, as noted by Plunkett and Mitchell (2000), because AIs live in more stressful environments (due to poverty, unemployment, social isolation, prejudice and discrimination) than most non-Hispanic whites. Such conditions serve to produce higher rates of many substance use behaviors. Additionally, the direct and indirect consequences of the colonization process of AIs, known as historical trauma, has been found to manifest itself in a number of adverse consequences, including substance abuse (LaFromboise et al., 2007; Walls and Whitbeck, 2011). Indeed, recent research has demonstrated the

applicability of the stress process model to AI adolescent substance use. For instance, LeMaster and colleagues (2002) found that two measures of stressful life events (e.g., the death of someone, suicide attempts by others, serious injuries or hospitalizations among friends/family members, breakups with boyfriend/girlfriends) were predictive of cigarette and smokeless tobacco use in a sample of American Indian adolescents. Likewise, Whitesell and colleagues (2007) found that recent stress exposure was associated with substance dependence onset among respondents from two American Indian reservations. Baldwin and associates (2011) found that stress exposure was a significant predictor of a measure of substance use among 221 AI youth (see also Boyd-Ball, 2006). And Cheadle and Whitbeck (2011) found that perceived discrimination was directly associated with the risk of problem alcohol use as well as indirectly by increasing both feelings of anger and exposure to delinquent friends among a sample of 727 American Indian adolescents.

Finally, there have been a couple of studies examining potential race differences in the employment of coping strategies among AIs versus whites. In a recent study, Corbine (2011) examined both stress exposure and coping strategies for 25 AI and 25 white adults. He found little difference in either perceived stress levels or coping styles employed, although he did find evidence of a race-gender interaction, with AI males more likely to prefer an emotion-oriented coping strategy compared to white males. In an earlier study of Cherokee and white elderly adults, Chovan and Chovan (1985) found that the Cherokee respondents were more likely to employ the intra-psychic (e.g. appraisal by the subject that they must accept or get used to the situation) coping strategy than the white respondents. Similarly, Strong (1984) examined a sample of 10 AI and 10 white caretakers and found that one coping strategy, passive forbearance, was more likely to be employed by the AI caretakers than their white counterparts. While each of these studies is illuminating, each is based on small samples, only include adult respondents, and do not examine whether such coping strategies are associated with substance use behaviors. Hence, the our research represents the first study to explore whether race differences exist that moderate the relationship between coping strategies and substance use behaviors among a sample of AI and white adolescents.

DATA AND METHODS

The rural teen stress and health study data were collected in 2010-2012 as part of a research project, funded by the National Institute of Drug Abuse, examining adolescent health disparities in a rural state. The data were collected to explore the efficacy of the stress process model for understanding American Indian and white disparities in substance use and HIV risk behaviors. We targeted rural school districts based on high school size and racial/ethnic composition. Our final study included five schools, with two high schools serving a student body less than the state average high school enrollment of 171 (the other three schools having an enrollment above the state average). Two of the participating schools had less than ten percent non-white enrollment, one school was racially mixed with greater than 30 percent non-white enrollment, and two schools had over 90 percent non-white student enrollment.¹ Our university institutional review board approved all data collection procedures. Superintendents of the selected school districts were sent a letter of introduction to the study and informed that one of the principal investigators would contact them by phone. Once superintendents approved the study, the principals of the high schools were contacted for their approval. Superintendents and principals were promised and received a written school report based only on the data collected at their specific school. Administrators were encouraged to contact the research team if they wanted additional access to the data

¹Due to the rural nature of the state, information regarding whether the school district served reservation or non-reservation American Indian students cannot be revealed (under the promise of confidentiality). All selected schools were part of public school districts.

collected from their school district. Each principal assigned a staff member (secretary, counselor, or school nurse) to help the research team distribute and collect consent forms from all students and their parents. The principal investigators traveled to each school site and personally administered the surveys to participating students in a classroom that was vacant, an auditorium, or a gymnasium. Data collection was designed to protect students' privacy by allowing for confidential and voluntary student participation once parents had been informed of and consented to their child's participation. Participating students were sent at an appointed school period to the assigned room where the research team distributed surveys. Students completed the paper and pencil self-administered questionnaire in anywhere from 20-50 minutes. Each student who turned in a survey (whether or not they completed it) received a \$10 gift certificate for his or her participation in the study.

Each paper survey was coded and recorded into spreadsheets by two research assistants. The data files were then compared for coding inconsistencies. All inconsistencies were clarified by revisiting the original surveys. The final sample included 612 respondents (72.4 percent non-Hispanic white, 20.4 percent American Indian, and 7.2 percent other racial/ethnic groups). Participant age ranged from twelve to nineteen. The majority of students were in high school (95.3%) at the time of the interview, although a small number were in junior high school, due to two participating schools being comprised of 7-12th grade. In the present analyses, only non-Hispanic white or American Indian respondents (n=568) were included.

While only a small percentage of responses on any given variable were missing², we imputed a set of values for missing data using a model-based multiple imputation method (mi) available in Stata 12. Such a procedure is more appropriate than ad-hoc missing data approaches such as complete case analysis because the ad-hoc approach tends to yield biased results (e.g., underestimation of the variance of the estimates and significance tests that are too optimistic) that are inefficient because of the reduced sample size due to removal of cases with missing data (Allison, 2010; He et al, 2010). This multiple imputation method obtains imputations by simulating from a Bayesian posterior predictive distribution of the missing data (or its approximation) under the conventional chosen distribution (StataCorp, 2011). The three basic steps to this multiple imputation method are: 1) the imputation step, where a number of imputed data sets are generated; 2) the estimation/analysis step, where the desired analysis is completed on each of the imputed data sets; and 3) the pooling step, where the results from each of the analyses are combined into a single multiple-imputation result (StataCorp, 2011). We imputed five (5) completed datasets.

Measures

The stress-coping model guided our selection of measures to be considered in the present study. Additionally, we included a number of factors that have been found to be predictive of adolescent substance use, including gender, age, family structure, and parental SES, in order to minimize concerns of spuriousness in the findings.

Dependent Variables—We examined two measures of substance use: past year marijuana use and past year alcohol use. Both items were measured by questions asking if the respondent had used the substance during the past year (1=yes).

Coping Strategies—The coping measures were based on the Brief COPE (Carver, 1997), which is an abbreviated version of Carver's original scales measuring coping strategies. The Brief COPE contains 14 subscales comprised of two items each. In the present analysis,

²The only variable with greater than five percent missing data was the measure of parents' education (5.8% missing). The coping measures were missing anywhere from 1.2%-3.7% of cases.

thirteen of the 14 strategies were considered (substance use as a coping strategy was not included). Carver (1997) based each Brief COPE subscale on the original four-item scales and found that these two-item subscales (from the Brief COPE) had adequate reliability when a shorter instrument was needed. While the Brief COPE (e.g., Carver, 1997) has been validated and shown to be reliable on a variety of different clinical and nonclinical populations (Perczek et al., 2000; Fogel et al., 2002; Kapsou et al., 2010), we report polychoric ordinal alphas for each two-item scale because this measure has been found to be a more accurate estimate of reliability than Cronbach's alpha for ordinal response scales and scales with fewer than three items (Gadermann, Guh, and Zumbo, 2012). The coping strategies considered in these analyses include: active ($\alpha = .70$), planning ($\alpha = .67$), positive reframing ($\alpha = .76$), acceptance ($\alpha = .57$), humor ($\alpha = .85$), religion ($\alpha = .90$), using emotional support ($\alpha = .77$), using instrumental support ($\alpha = .83$), self-distraction ($\alpha = .41$), denial ($\alpha = .62$), venting ($\alpha = .53$), behavioral disengagement ($\alpha = .41$), and self-blame ($\alpha = .71$). We provide a complete list of all items and reliability coefficients for each coping measure for both American Indians and non-Hispanic white respondents in Appendix A. All items utilized a four-point Likert scale response, ranging from "I didn't do this at all" to "I did this a lot." Subscale scores ranged from 0 to 6, with higher scores indicating greater use of a particular coping strategy.

Additional measures—We included a number of demographic measures in the analyses, including *gender* (female coded 0), *race* (American Indian coded 1), *age*, and two measures of parental social class—whether at least one parent had a *college education*, and whether at least one parent was *employed full-time*. We also included a dichotomous measure of *family structure*, asking the respondent whether they resided with both of their natural parents (yes=1).

Because coping strategies are employed in response to stressful or demanding circumstances and experiences (Folkman and Lazarus, 1988), we also included two common measures of stressors—*recent life events* and *chronic strains*. Consistent with prior research, we created an additive measure of *recent life events* composed of 26 items capturing adverse experiences reported by the respondent to have occurred in the past year. These events are typical of those included in a variety of other event checklists (e.g., Avison and Turner, 1988; Turner et al., 1995; Turner and Gil, 2002). Multiple occurrences of the same event are not included in the count.

Chronic strains capture the array of stressful conditions that are open-ended without a natural endpoint (Wheaton, 1994). We employ a measure of ten items capturing such stressful conditions as strains related to parents/guardians (3 items), school related strain (1 item), relationship strain (2 items) and general/ambient strain (4 items). These items have been used in other studies measuring chronic strains among adolescents and young adults (e.g., Eitle and Turner, 2003). Higher scores indicate greater exposure to chronic strains (Cronbach's $\alpha = .72$). Appendix A describes the key measures used in the analyses, while Table 1 presents the summary statistics.

RESULTS

In Table 2 we present mean values for each of the coping strategies for both AI and white adolescents. As one can adduce from this table, there were few racial differences in the usage of various coping strategies. Indeed, only four strategies were found to be significantly different in use by race. White respondents appeared to be more likely to employ active coping strategies (3.87 versus 3.39), acceptance (4.24 versus 3.82) and self-blame (2.87 versus 2.26) coping strategies than AI respondents, while AI students were more likely to employ denial as a coping strategy than whites (1.66 versus 1.30). The

finding that whites were more likely to employ active coping strategies is consistent with the notion that minorities, due to the increased likelihood of having limited resources (relative to whites), are less likely to engage in active coping strategies because of the resource demands needed to utilize such strategies (Richman et al., 2011). Overall, these results suggested that while some racial differences in the use of various coping strategies existed, there was considerable convergence in the use of various coping styles as well.

Table 3 presents the logistic regression results of the past year marijuana use, reporting only the adjusted odds ratio for the various coping strategies and for race (AI). However, additional analyses (not reported) that included only the control variables did indeed find that being American Indian was a significant correlate of past year marijuana use, with an adjusted odds ratio of 3.28. Likewise, older students, being raised in a non-two parent family, and being exposed to more recent life events were each associated with past year marijuana use (results available upon request).

As one can adduce from Table 3, a number of coping strategies are useful in protecting the adolescent from marijuana use. Of the thirteen strategies examined, six were found to have statistically significant associations with marijuana use, with five coping strategies serving to reduce the likelihood of such use. Active coping, planning, religion, using instrumental support, and self-distraction were found to be associated with a lower risk of past year marijuana use, holding other variables constant. Only behavioral disengagement was found to be associated with greater marijuana use (adjusted odds ratio=1.18). Meanwhile, accounting for these coping strategies did not substantially reduce the racial difference in marijuana use (American Indian column of Table 3).

Our consideration of past year alcohol use revealed that being an American Indian was not a risk factor (American Indian column of Table 4), but age and being exposed to more recent life events were risk factors. Similar to the pattern for marijuana use, three coping strategies emerged for alcohol use (Table 4). None of the coping strategies were found to be significant risk factors for alcohol use, but planning, religion, and using instrumental support served a protective function, reducing the odds of past year alcohol use.

In order to evaluate whether the utility of coping strategies in reducing past year substance use varies by race, we examined models that included interaction terms (race*coping strategy).³ While we examined each of the thirteen coping strategies (by race) for both marijuana and alcohol use, only one interaction emerged as statistically significant ($p < .05$) —for marijuana use, the effect of self distraction differed by race. As figure 1 indicates, the differences in the association between self-distraction and marijuana use by race were dramatic. For whites, an increased use of self-distraction coping strategies was associated with a decreased likelihood of marijuana use. But for AIs, the reverse association was found —increased used of self-distraction was associated with an *increased* risk of alcohol use, controlling for all other variables.

³A number of scholars (e.g., Hoetker, 2007; Zelner, 2009) caution against interpreting interaction terms in nonlinear models in the same way as they are interpreted in OLS regressions. In nonlinear models, the significance of the interaction effect cannot be determined just by the significance of the interaction coefficient (Hoetker, 2007: 336). There can be a significant interaction effect for some observations when the coefficient is not statistically significant, and conversely some observations may not have a significant interaction effect when the coefficient is statistically significant. Hoetker (2007) recommends graphical presentations to “provide a more nuanced understanding of the practical effect” (pg. 337). We follow this advice and provide a graphical illustration of a select interaction. Unfortunately, space limitations warrant that we restrict our presentation to one example.

DISCUSSION

The present study examined the role of coping strategies in predicting past year substance use. This study represents, to the best of our knowledge, the first study to explore whether race differences exist that moderate the relationship between coping strategies and substance use behaviors among a sample of AI and white adolescents. Overall, we uncovered a number of compelling findings. First, we found that a number of the coping strategies did appear to serve as a protective factor against substance use for both American Indian and white respondents. Problem-focused coping strategies such as active and planning coping as well as instrumental coping were protective for substance use among both white and AI respondents. Consistent with prior research (Brechtling and Giancola 2007), religious coping strategies also emerged as protective for substance use in our analyses. Second, although a number of the avoidant coping strategies appear to be unrelated to substance use in this study, only one such strategy—behavioral disengagement—was found to be a risk factor for substance use for our sample. However, it should be noted that behavioral disengagement, followed closely by denial, was the most infrequently used coping strategy of those examined.

We also found evidence that the relationship between another avoidant coping strategy, self-distraction, and marijuana use differed for whites and AIs. Specifically, self-distraction appeared to be effective at reducing the propensity to use marijuana for whites, but was associated with increased risk of marijuana use among AIs. The latter finding is somewhat novel, given that past research has found that avoidance coping strategies are maladaptive for samples of white respondents (Baer et al., 1987; Richman et al., 2011) while being a protective factor for other racial minorities, such as African Americans (Richman et al., 2011; Van Gundy and Howerton, 2005). Our results lend further credence to the notion that the relationship between coping strategies and outcomes is much more nuanced and complex than has been suggested, with coping strategies being adaptive, maladaptive, or even of no import in predicting substance use behavior among adolescents.

However, we also found a number of similarities among whites and AIs in their employment of coping strategies. For both groups, acceptance was the most commonly used strategy, while denial and behavioral disengagement, both branded as maladaptive coping strategies in the past, were least frequently employed by both AIs and white adolescents in this study. Additionally it should be noted that race was not associated with past year alcohol use, but it was associated with past year marijuana use, with AIs remaining at a greater risk for marijuana use even after considering the various coping strategies. This finding suggests that the use of different coping strategies does not explain the higher use of marijuana among AIs compared to whites.

As is the case with any study, our findings should be considered in light of some important limitations. First, our study was a cross-sectional one, so we cannot make any inferences about the casual direction of the associations revealed in the analyses. Furthermore, the study examined students across five school districts in a rural state, so the results cannot be generalized to a representative population sample of American students (including race-specific groups). Third, the use of a student-based sample of adolescents may exclude young people who are more likely to be involved in substance use—truants and dropouts were obviously not included in the sample. Fourth, the validity of self-report measures of substance use has been questioned by a number of scholars in the past (Dembo, Williams, Wish, and Schmeidler, 1990; Mieczkowski, Newel, and Wraight, 1998). And fifth, while the problems of estimating reliability with two-item scales were mentioned earlier, a couple of the scales had low estimates of reliability, raising some questions about the internal consistency of these items. Finally, it must be noted that adolescents may engage in

substance use for reasons other than the stress driven thesis featured in this study. For example, Murray and Perry (1985) have noted that adolescents, particularly younger ones, may use substances as a demarcation of developmental milestones and to gain social acceptance. Therefore, the associations between coping strategies and substance use (again) may not be causal in nature, to the extent that stress exposure alone is not triggering substance use among many adolescent users.

The present study explored AI-white differences in coping and the relationship between coping strategies and two types of substance use: past year alcohol use and past year marijuana use. The findings in this study are important as they highlight that in most instances the coping strategies most protective for alcohol or marijuana use were utilized similarly by AI and white adolescents. The exception was active coping, which was associated with reductions in marijuana use for all students, but was more likely to be used by white students. We also found little evidence of differences by race in the nature of the association between coping strategies and substance use. Only self-distraction, considered a maladaptive coping strategy, was actually protective for marijuana use among white adolescents while having a modest positive association with AI marijuana use. However, the inability to detect such differences may be due to the small sample size (AI=125). In fact, racial differences in the relationship between other coping strategies, such as active, religious, and behavioral disengagement coping, and substance use approached significance ($p = .05$), and should be explored more thoroughly in future studies.

Finally, prior scholarship has suggested that native identity or enculturation, as part of a process that Walters and her colleagues (2002) identified as a “indigenist” stress-coping paradigm may serve to promote both positive health outcomes and reductions in substance use among AIs (Dinges and Joos, 1988; Walters, Simoni, and Evans-Campbell, 2002; Wolsko et al, 2007; Yu and Stiffman 2007). Given that our focus was on racial disparities in the use and efficacy of various coping strategies, future studies should address race-specific coping strategies such as native identity or enculturation to provide a more comprehensive evaluation of the role of coping strategies in AI substance use.

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Appendix A. Measures of Key Variables

Recent Life Events (Identify all events that happened to you in the past year):

A serious injury or accident

Serious illness

Death of someone close to you

Trouble with the police

Something stolen/taken

Beaten up or physically attacked

Unwanted Pregnancy

Abortion/miscarriage
 Arrested for a crime
 Dropped out of school
 Failed a grade
 Abandoned by parents or put up for adoption
 Someone in your family drinking or using drugs so often that it caused family problems
 Loss of home/apartment because of natural disaster
 Forced to do something sexual that you did not want to do
 Physically abused or injured by someone close to you
 Emotionally abused by someone close to you
 Witness a close relative abused physically or emotionally
 Shot at with a gun or threatened with another weapon (but not hurt)
 Shot or stabbed and hurt
 Witness someone outside of your home getting shot, stabbed, or beaten
 Witness someone outside of your home die
 A romantic relationship ended
 A close friendship ended
 Moved to a worse residence
 Your parents asked you to leave the house (kicked out)
Chronic Stressors (responses= not true, somewhat true, very true)
 You're trying to take on too many things at once
 There is too much pressure put on you to be like other people
 Too much is expected of you by others
 You have a lot of conflict with your best friend
 You are not sure you can trust your best friend
 Your guardian/parent(s) don't really remember what it was like to be your age
 Your guardian/parent(s) expect you to act like they did when they were young
 Your guardian/parent(s) beliefs are old-fashioned or old school
 You are not popular with the opposite sex

You are concerned about your ability to keep up your grades

Coping strategies

Active coping (American Indian: $\alpha = .63$, Non-Hispanic White: $\alpha = .70$)

I focus my efforts on doing something about the situation I'm in

I take action to try to make the situation better

Planning (American Indian: $\alpha = .43$, Non-Hispanic White: $\alpha = .71$)

I try to come up with a strategy about what to do

I think hard about what steps to take

Positive Reframing (American Indian: $\alpha = .67$, Non-Hispanic White: $\alpha = .77$)

I try to see it in a different light, to make it seem more positive

I look for something good in what is happening

Acceptance (American Indian: $\alpha = .73$, Non-Hispanic White: $\alpha = .50$)

I accept the reality that my problems have happened

I learn to live with it

Humor (American Indian: $\alpha = .84$, Non-Hispanic White: $\alpha = .86$)

I make jokes about my problems

I make fun of the situation

Religion (American Indian: $\alpha = .76$, Non-Hispanic White: $\alpha = .92$)

I try to find comfort in my religion or spiritual beliefs

I pray or meditate

Using Emotional support (American Indian: $\alpha = .71$, Non-Hispanic White: $\alpha = .78$)

I get emotional support from others

I get comfort and understanding from someone

Using Instrumental support (American Indian: $\alpha = .82$, Non-Hispanic White: $\alpha = .83$)

I try to get advice or help from other people about what to do

I get help and advice from other people

Self-distraction (American Indian: $\alpha = .46$, Non-Hispanic White: $\alpha = .40$)

I turn to school or other activities to take my mind off things

I do something to think about my problems less, such as going to movies, watching TV, reading,

daydreaming, sleeping, or shopping

Denial (American Indian: $\alpha=.53$, Non-Hispanic White: $\alpha=.65$)

I say to myself “this isn’t real”

I refuse to believe that bad stuff has happened

Venting (American Indian: $\alpha=.57$, Non-Hispanic White: $\alpha=.53$)

I say things to let my unpleasant feelings escape

I express my negative feelings

Behavioral disengagement (American Indian: $\alpha=.25$, Non-Hispanic White: $\alpha=.45$)

I don't deal with life's problems

I've given up the attempting to cope

Self-blame (American Indian: $\alpha=.67$, Non-Hispanic White: $\alpha=.71$)

I criticize myself

I blame myself for things that happened

GLOSSARY

Stress process (stress-coping model)	a model that examines the association between exposure to stressors in one's life and an array of adverse physical and mental health consequences
Coping strategies	the array of cognitive and behavioral strategies that people use to manage stress
Problem-focused coping	efforts to alter the stressful environment and/or the consequences of stress exposure
Emotional-focused coping	strategies aimed at palliating negative affect that is a result of stress exposure
Brief COPE	an abbreviated version of a survey instrument developed by Carver (1997) to measure various coping strategies

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Figure 1. Predicted probabilities of past year alcohol use for select values of self-distraction coping by race

Table 1

Descriptive Statistics (n=568)

	Mean	Std. Dev.	Min	Max
Past year Marijuana Use	.32	.47	0	1
Past year Alcohol Use	.56	.50	0	1
Female	.55	.50	0	1
Age	15.8	1.44	12	19
Family structure (2 parent family=1; else=0)	.58	.49	0	1
American Indian (=1; white=0)	.22	.41	0	1
Parental education (college degree=1; else=0)	.58	.49	0	1
Parental full time employment	.90	.30	0	1
Recent life events	2.81	2.81	0	19
Chronic stressors	6.63	3.84	0	20

TABLE 2

White and American Indian means for coping strategies

	White (n=443)	95% CI	American Indian (n=125)	95% CI
Coping strategies				
Active coping	3.87	3.75-4.00	3.39 ***	3.14-3.65
Planning	3.53	3.39-3.68	3.32	3.07-3.58
Positive reframing	3.41	3.26-3.56	3.33	3.06-3.61
Acceptance	4.24	4.11-4.37	3.82 **	3.53-4.11
Humor	2.60	2.42-2.78	2.66	2.32-3.01
Religion	2.58	2.44-2.73	2.69	2.41-2.97
Using emotional support	3.22	3.08-3.37	3.01	2.71-3.30
Using instrumental support	3.00	2.85-3.16	3.14	2.81-3.47
Self-distraction	3.61	3.47-3.75	3.51	3.23-3.79
Denial	1.30	1.16-1.43	1.66 **	1.39-1.93
Venting	2.47	2.33-2.61	2.19	1.92-2.47
Behavioral disengagement	1.23	1.11-1.35	1.43	1.19-1.67
Self-blame	2.87	2.70-3.04	2.26 ***	1.95-2.57

* $p < .05$ ***
 $p < .001$ **
 $p < .01$

TABLE 3

Logistic Regression with past year use of marijuana as the dependent variable (n=568)^a

	Adjusted odds ratio Coping strategy	95% CI	Adjusted odds ratio American Indian	95% CI
Coping strategies				
Active coping	0.84 *	0.73-0.97	3.14***	1.97-5.01
Planning	0.80 **	0.70-0.91	3.23***	2.02-5.15
Positive reframing	0.88	0.78-1.00	3.32***	2.08-5.29
Acceptance	0.97	0.84-1.12	3.25***	2.04-5.19
Humor	0.98	0.88-1.08	3.29***	2.07-5.24
Religion	0.80 **	0.70-0.92	3.54***	2.21-5.68
Using emotional support	0.91	0.80-1.03	3.26***	2.05-5.18
Using instrumental support	0.85 **	0.75-0.95	3.47***	2.17-5.55
Self-distraction	0.87 *	0.76-0.99	3.33***	2.09-5.31
Denial	1.00	0.88-1.15	3.28***	2.06-5.23
Venting	0.95	0.83-1.09	3.23***	2.02-5.15
Behavioral disengagement	1.18 *	1.01-1.38	3.30***	2.07-5.27
Self-blame	1.03	0.91-1.16	3.36***	2.09-5.40

**
 $p < .01$ *
 $p < .05$

^a This table shows the results from 13 logistic regression models, including each coping strategy separately. All models include controls for gender, age, family structure, race, parental education, parental employment status, exposure to recent life events and chronic strains. Appropriate statistics, adjusted odds ratios and 95% confidence intervals are shown only for the independent variable of interest—coping strategy.

TABLE 4

Logistic Regression with past year use of alcohol as the dependent variable (n=568)^a

	Adjusted odds ratio Coping strategy	95% CI	Adjusted odds ratio American Indian	95% CI
Coping strategies				
Active coping	0.89	0.78-1.02	0.71	0.45-1.14
Planning	0.79 ***	0.70-0.90	0.70	0.44-1.13
Positive reframing	0.95	0.84-1.07	0.75	1.22-1.48
Acceptance	0.91	0.80-1.05	0.72	0.45-1.15
Humor	1.06	0.96-1.17	0.74	0.47-1.19
Religion	0.84 **	0.75-0.95	0.77	0.48-1.23
Using emotional support	0.98	0.88-1.11	0.75	0.47-1.19
Using instrumental support	0.87 *	0.78-0.97	0.77	0.48-1.23
Self-distraction	0.90	0.79-1.02	0.75	0.47-1.20
Denial	0.93	0.81-1.06	0.76	0.48-1.22
Venting	1.00	0.88-1.13	0.75	0.47-1.19
Behavioral disengagement	0.98	0.84-1.14	0.75	0.47-1.20
Self-blame	0.94	0.83-1.05	0.71	0.44-1.15

 $p < .001$ **
 $p < .01$ *
 $p < .05$

^a This table shows the results from 13 logistic regression models, including each coping strategy separately. All models include controls for gender, age, family structure, race, parental education, parental employment status, exposure to recent life events and chronic strains. Appropriate statistics, adjusted odds ratios and 95% confidence intervals are shown only for the independent variable of interest—coping strategy.

TABLE 5Interaction Terms from Logistic Regression with past year substance use as the dependent variables^a

	Marijuana Use (n=568)
	Adjusted odds ratio
American Indian	1.12
Self-distraction	.79 **
American Indian*self distraction	1.36 *

+ $p < .1$ **
 $p < .01$ *
 $p < .05$

^aThis table shows only the statistically significant results from 13 logistic regression models, including each interaction term (race * coping strategy) separately. All models include controls for gender, age, family structure, parental education, parental employment status, exposure to recent life events and chronic strains.