



## Short Communication

## Associations between coping and marijuana use in a nationally representative sample of adolescents in the United States



Angela E. Lee-Winn\*, Tamar Mendelson, Renee M. Johnson

Department of Mental Health, Johns Hopkins Bloomberg School of Public Health, 624 North Broadway Hampton House, Baltimore, MD 21205, United States

## HIGHLIGHTS

- Avoidance coping was associated with higher lifetime and frequency of marijuana use.
- Distraction coping was associated with higher lifetime marijuana use.
- Problem solving was associated with lower lifetime and frequency of marijuana use.
- Avoidance coping combined with low problem solving appeared to be especially maladaptive.

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## ABSTRACT

Maladaptive coping strategies have been linked with substance use. Little is known, however, about associations between coping and marijuana use in the general U.S. adolescents. We used nationally representative data to examine associations between coping and marijuana use among U.S. adolescents. We hypothesized that marijuana use would be positively associated with both avoidance and distraction coping and negatively associated with problem solving. We calculated adjusted prevalence ratios and odds ratios to assess associations of three coping styles (avoidance, distraction, problem solving) and six coping profiles based on combinations of the styles (adaptive, low on all styles, distracted, high on all styles, avoidant, maladaptive) with lifetime marijuana use and past 12-month frequency of use using data from the National Comorbidity Survey: Adolescent Supplement ( $n = 8476$ , ages 14–18 years). Avoidance and distraction coping were positively and problem solving was negatively associated with lifetime marijuana use. Avoidance coping was positively associated, and problem solving negatively associated, with past 12-month frequency of use. Compared to the adaptive coping profile (low avoidance and distraction, high problem solving), maladaptive profile (high avoidance and distraction, low problem solving) and avoidance profile (high avoidance, low distraction and problem solving) were each positively associated with lifetime marijuana use and past 12-month frequency of use. Avoidance coping, especially in combination with limited problem solving, was positively associated with lifetime marijuana use and past 12-month frequency of use. Our findings have potential to inform interventions for reducing adolescent marijuana use.

## 1. Introduction

Enhancing our understanding of the association between coping and marijuana use is a key step toward improving primary prevention strategies for marijuana use (Faggiano, Minozzi, Versino, & Buscemi, 2014). Two commonly contrasted styles of coping are emotion-focused and problem-focused coping (Lazarus & Folkman, 1984). Emotion-focused or disengagement coping has been linked with early substance use initiation and continued use, whereas problem-focused or engagement coping is considered protective against substance use (McConnell, Memetovic, & Richardson, 2014; Wills, Sandy, & Yaeger, 2001; Wills,

Sandy, Yaeger, Cleary, & Shinar, 2001). Studies have shown that people who relied heavily on avoidance coping and did not often use problem solving strategies reported increased psychological distress and unhealthy behaviors, including substance use (Doron, Thomas-Ollivier, Vachon, & Fortes-Bourbousson, 2013; Doron, Trouillet, Maneveau, Neveu, & Ninot, 2015; Eisenbarth, 2012), whereas those who engaged in problem solving and had low levels of avoidance reported fewer symptoms of maladjustment and increased pro-social competencies (Steele, Cushing, Bender, & Richards, 2008).

Adolescent coping and substance use have been studied in a community (e.g., Wills, Sandy, and Yaeger (2001), Wills, Sandy, Yaeger,

\* Corresponding author.

E-mail address: [aleewin1@jhu.edu](mailto:aleewin1@jhu.edu) (A.E. Lee-Winn).

Cleary, and Shinar (2001)) and clinical setting (e.g., Siqueira, Diab, Bodian, & Rolnitzky, 2001), but coping has not yet been specifically assessed in association with marijuana use in a nationally representative dataset, which would provide more definitive evidence of an association. We used data from the National Comorbidity Survey: Adolescent Supplement (NCS-A) (Kessler et al., 2009; Kessler et al., 2009; Merikangas, Avenevoli, Costello, Koretz, & Kessler, 2009), a cross-sectional, nationally representative study, to identify associations between coping and marijuana use. We characterized coping as three distinct styles (avoidance, distraction, problem solving) and also as six profiles based on combinations of the three styles. We hypothesized that marijuana use would be positively associated with both avoidance and distraction and would be negatively associated with problem solving.

## 2. Material and methods

### 2.1. Study design and participants

The NCS-A (2001–2004) contains information on prevalence, correlates, and service use patterns for major psychiatric disorders in a sample of 10,148 U.S. adolescents aged 13–18 (Kessler, Avenevoli, Costello, et al., 2009; Kessler, Avenevoli, Green, et al., 2009; Merikangas et al., 2009). We excluded 13 year olds because they reported very low levels of marijuana use, resulting in a study sample of 8495 adolescents aged 14–18. We received NCS-A data access permission from the Interuniversity Consortium for Political and Social Research and obtained university IRB approval.

### 2.2. Measures

#### 2.2.1. Marijuana use

Our dependent variables were self-reported *lifetime marijuana use* (yes:  $n = 2214$ , no:  $n = 6262$ ) and *frequency of marijuana use in the past 12 months* (daily/near daily use,  $n = 380$ ; moderate use,  $n = 410$ , infrequent use,  $n = 580$ ).

#### 2.2.2. Coping

Our independent variables were coping styles and profiles. The NCS-A's self-reported measure of coping was largely adapted from the Ways of Coping Scale (Folkman & Lazarus, 1980, 1985).

**2.2.2.1. Coping styles.** Based on our previous factor analysis that identified three coping styles using polychoric correlations (see Lee-Winn, Townsend, Reinblatt, & Mendelson, 2016), we analyzed the following three styles as continuous independent variables: 1) escape-avoidance (labeled 'avoidance' hereafter), 2) distraction, and 3) problem solving. Sample questions included "when under stress how much would you...?": daydream about how things used to be (avoidance), do things to take your mind off the situation (distraction), and try to analyze the problem and see how to make it better (problem solving).

**2.2.2.2. Coping profiles.** Previous cluster analyses of coping profiles identified four coping profiles: adaptive (low avoidance, high problem solving), low (low avoidance and problem solving), high (high avoidance and problem solving), and avoidance (high avoidance, low problem solving) (Doron et al., 2013, 2015; Eisenbarth, 2012; Steele et al., 2008). Only one of these studies (Doron et al., 2015) included distraction coping and did not assess it in the context of coping profiles. We assessed distraction as a coping style and also integrated it within our coping profiles to extend the literature. Because each coping style had different numbers of items and the styles were not normally distributed, we performed a median split to dichotomize each of the three coping styles and combined the resulting categories to create six coping profiles: 1) *adaptive*: low avoidance, low distraction, high

problem solving ( $n = 895$ , reference group), 2) *low on all styles* (labeled "low"): low avoidance, distraction, and problem solving ( $n = 2013$ ), 3) *high on all styles* (labeled "high"): high avoidance, distraction, and problem solving ( $n = 808$ ), 4) *distracted*: high distraction, low avoidance, low problem solving ( $n = 1250$ ), 5) *avoidant*: high avoidance, low distraction, low problem solving ( $n = 1074$ ), 6) *maladaptive*: high avoidance, high distraction, low problem solving ( $n = 1289$ ). We analyzed coping profile as a categorical independent variable.

#### 2.2.3. Sociodemographic covariates

The NCS-A collected data on self-reported adolescents' age, gender, race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, Other), and educational attainment of either parent (less than high school, high school, some college, college graduate).

### 2.3. Statistical analyses

We examined descriptive statistics for the sociodemographic variables and calculated their associations with marijuana use behaviors (lifetime, past 12-month frequency of use) using weighted chi-squared tests and with the three coping styles (avoidance, distraction, problem solving) using adjusted Wald tests. We used generalized linear modeling to calculate adjusted prevalence ratios to examine associations between coping and lifetime marijuana use. We used multinomial logistic regression to calculate relative risk ratios to assess associations between coping and the past 12-month frequency of use (daily/near daily and moderate versus infrequent). Our main analyses included three models with the three coping styles as independent variables and one model with the six-category coping profile as our independent variable. These models were estimated separately with lifetime marijuana use and past 12-month frequency of use as the two dependent variables, for a total of eight models. We controlled for adolescent age, gender, race/ethnicity, and parent education in adjusted analyses. Our statistical significance level was set at  $p < 0.05$ . We applied complex survey weights prior to analyses. Analyses were conducted using Stata 13 (StataCorp, 2013).

## 3. Results

### 3.1. Sample characteristics

Older adolescents ( $\chi^2 = 71.63$ ,  $p < 0.001$ ) and those whose parents had not completed college ( $\chi^2 = 10.55$ ,  $p < 0.001$ ) reported more lifetime marijuana use. Boys ( $\chi^2 = 4.98$ ,  $p = 0.01$ ) and those in the "Other" race/ethnicity group ( $\chi^2 = 3.03$ ,  $p = 0.03$ ) reported more past 12-month frequent marijuana use than girls and Whites, respectively.

As presented in Table 1, girls reported higher levels of avoidance ( $F = 123.16$ ,  $p < 0.001$ ) and problem solving ( $F = 34.46$ ,  $p < 0.001$ ) than boys, whereas boys reported higher levels of distraction than girls ( $F = 49.83$ ,  $p < 0.001$ ). Non-Hispanic Blacks and Hispanics reported higher levels of avoidance ( $F = 9.91$ ,  $p < 0.001$ ) and distraction ( $F = 17.05$ ,  $p < 0.001$ ) as compared to non-Hispanic Whites. Adolescents whose parents did not complete college reported higher levels of avoidance ( $F = 11.75$ ,  $p < 0.001$ ) and distraction ( $F = 5.69$ ,  $p = 0.002$ ) and lower levels of problem solving ( $F = 20.63$ ,  $p < 0.001$ ) than those whose parents had graduated from college. Likelihood of reporting the three coping styles did not differ by age.

### 3.2. Coping and marijuana use

As displayed in Table 2, in analyses that evaluated the three separate coping styles, the two maladaptive styles (avoidance and distraction) were significantly associated with greater lifetime marijuana use, whereas problem solving—an adaptive coping strategy—was

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