

Brief Report

Does Avoidant Coping Influence Young Adults' Smoking?: A Ten-Year Longitudinal Study

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Abstract

Introduction: Young adults who avoid their emotions may be at risk for starting smoking or not quitting smoking. This study investigated whether a preliminary measure of avoidant coping longitudinally predicts young adults' smoking escalation and cessation.

Methods: In a sample of the 3,305 participants, originally from Washington State, a preliminary measure of self-reported avoidant coping at age 18 was used to predict both smoking escalation and cessation at ages 20 and 28 with both probability and logistic regression models (10-year retention: 98.5%).

Results: Individuals who scored high on avoidant coping at 18 were 2.52 ($p = .001$) times more likely to acquire smoking by 20. However, there was no evidence that avoidant coping at age 18 predicted smoking escalation at 28 or cessation for 20- and 28-year-olds.

Conclusions: An avoidant coping style may have a short-term effect on young adults' smoking acquisition. Future research using a precise and well-validated measure of avoidant coping is now needed to test this possibility.

Introduction

Young adult smoking remains at high levels (21%; Centers for Disease Control and Prevention, 2009). Accordingly, understanding why young adults escalate or stop smoking would help identify specific targets for smoking prevention or cessation programs. The purpose of this brief report is to examine whether an avoidant coping style is one factor that may explain why young adults smoke or fail to quit smoking.

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The Paradox of Avoidant Coping and Its Implications for Smoking

Recent research has focused on the paradoxical role of avoidant coping in health behavior (Erskine, Georgiou, & Kvavilashvili, 2010; Wegner & Erskine, 2003). Avoidant coping is defined as the tendency to divert attention away from aversive emotions, thoughts, and physical sensations elicited by challenging situations (Krohne & Egloff, 2005). An avoidant coping style may paradoxically increase the very emotions, thoughts, and sensations that an individual is trying to avoid. For example, recent research has demonstrated that efforts to avoid thinking about a topic (e.g., smoking) can actually increase the thinking about that specific topic (e.g., thinking about smoking) and increase behaviors associated with the topic (e.g., smoking; Erskine et al., 2010; Wegner & Erskine, 2003).

We propose that smoking may play an important role in this paradox. Specifically, individuals with avoidant coping styles may use smoking as one way to avoid noticing aversive thoughts, emotions, and sensations. Indeed, we propose that those with avoidant coping styles increase their smoking behavior (e.g., escalate to daily smoking) through this continuous feedback loop: aversive emotional state→smoking in order to avoid aversive emotional state→paradoxical increase in aversive emotional state→smoking in order to avoid aversive emotional state. Furthermore, we posit that a similar feedback loop may impede their success in quitting smoking: withdrawal symptoms and urges→smoking in order to avoid withdrawal symptoms and urges→paradoxical increase in withdrawal symptoms and urges→smoking in order to avoid withdrawal symptoms and urges.

To help empirically establish the basis for these feedback loops, examining the extent to which avoidant coping predicts young adult smoking escalation and cessation would be valuable. Data on such predictions are rare. To date, only one study

has examined the role of avoidant coping in adolescent smoking (Dugan, Lloyd, & Lucas, 1999). Specifically, in a 6-month prospective study of 3,542 (74% retention), an avoidant coping style predicted an increase in adolescent smoking acquisition. Regarding the role of avoidant coping in young adulthood, Hussong and Chassin (2004) found no cross-sectional association between avoidant coping and substance use. No prospective studies of the relationships between avoidant coping and young adult smoking have been reported.

Stress as a Moderator

Higher levels of life stress may increase aversive emotions, thereby strengthening the link between smoking to avoid aversive emotions and subsequent paradoxical increases in aversive emotions. The relationship between stress and substance use is well established (Cooper, Wood, Orcutt, & Albino, 2003; Dugan et al., 1999; Wagner et al., 1999; Wills, Sandy, Yaeger, Cleary, & Shinar, 2001). Hussong and Chassin (2004) reported that young adult alcohol use, but not drug use, was cross-sectionally related to an interaction between avoidant coping and young adult transition-related stress. However, no studies to date have examined whether stress moderates the association between an avoidant coping style and smoking.

This Study

Using a large heterogeneous population-based longitudinal sample surveyed at ages 18, 20, and 28 years, we will test these two hypotheses with a preliminary measure of avoidant coping:

Hypothesis 1: The 18-year-olds who score high on avoidant coping will be more likely to escalate to daily smoking and to have not quit smoking between ages 18 and 20 and between ages 20 and 28 years.

Hypothesis 2: Age 18 life stress will moderate the relationship between avoidant coping and these smoking transitions. Specifically, the association between avoidant coping and smoking escalation or cessation will be stronger among those who report high levels of life stress than among those who report low levels of life stress.

Methods

This study used data from the landmark Hutchinson Smoking Prevention Project (HSPP)—a 15-year, 40 school district school-based tobacco use prevention randomized trial (Peterson, Kealey, Mann, Marek, & Sarason, 2000).

Inclusion criteria: (a) *provision of age 18 baseline data*: the participants' baseline smoking status, avoidant coping status, and life stress over the past year; (b) *provision of age 20 and 28 follow-up data*: participants' smoking status. There were 3,355 18-year-olds who provided baseline data of whom 3,305 (98.5% retention) provided age 20 and 28 follow-up data. The sample was 50.7% male, 90.8% Caucasian, and 23% were at-least-daily smokers at age 18.

Procedures

Participants' data were collected via self-report at age 18 in a classroom survey or by mail/telephone survey. At ages 20 and 28, the

participants reported their smoking status by a mail/telephone follow-up survey. The Fred Hutchinson Cancer Research Center's Institutional Review Board annually approved these procedures.

Measures

Avoidant Coping Style

An avoidant coping style was measured at age 18. A psychometrically validated avoidant coping measure that had high reliability would have been ideal. However, in order to survey a large number of participants with high long-term data retention, the preliminary measure of avoidant coping was limited to only two items: "When I have a problem, I usually just give up" and "If something does not go well, I keep at it until it does" (reverse coded). These items were nearly identical to those of avoidant coping items used in previous studies (Carver, 1997; Carver, Scheier, & Weintraub, 1989). The response options were *just like me* (coded 0), *somewhat like me* (coded 1), *only a little like me* (coded 2), and *not like me* (coded 3). In a principal-components factor analysis, there was strong evidence for one factor (eigenvalue = 1.42) that explained 71% of the total variance of the two items ($\alpha = .59$, $M = 1.05$, $SD = 1.09$).

Life Stress

Life stress was measured with a single item when the participant was 18 years. The item was "I had a lot of stress in my life last year," with response options identical to the avoidant coping scale ($M = 0.99$; $SD = 1.01$).

Outcome Variables

Smoking datapoints at age 20 and 28 marked the key periods of early young adulthood and late young adulthood. *Escalation* during the age 18- to 20-year interval transition was defined as increasing from (a) less-than-daily current smoking and not having smoked at least 100 lifetime cigarettes at age 18 to (b) at-least-daily current smoking and having smoked at least 100 lifetime cigarettes at age 20. Escalation during the age 20- to 28-year interval was defined using the same smoking frequency criteria. Escalation to daily smoking is important because it is associated with tobacco dependence and serious short-term and long-term health consequences (Chassin, Presson, Pitts, & Sherman, 2000; Holmen, Barrett-Connor, Holmen, & Bjermer, 2000).

Smoking cessation during the age 18- to 20-year interval was defined as (a) at-least-daily current smoking and having smoked 100 lifetime cigarettes at age 18 and (b) having quit smoking for at least one month at age 20. Cessation during the age 20- to 28-year interval was defined using the same criteria, except that cessation was for at least twelve months at age 28. While a substantial duration of cessation would be ideal (e.g., at least twelve months) for the age 20 outcome, only a small number of individuals had quit for a year because only 2 years had passed since the age 18 assessment. Demographic characteristics by smoking outcomes are shown in Table 1.

Analytic Strategy

We used logistic regression models to examine to what extent avoidant coping predicts the absolute probability that an individual would make escalate or quit smoking. The first two models expressed the absolute probability of escalating to daily smoking during the period ages 18–20 (first model) and 20–28 (second model) as a function of scoring high on avoidant coping

Table 1. Demographic Characteristics by Smoking Outcomes

Demographic	Smoking interval: 18–20 years		Smoking interval: 20–28 years	
	Acquired	Quit smoking	Acquired	Quit smoking
Analysis sample size	2,786	460	2,684	541
Gender, <i>n</i> (%)				
Males	1,367 (49)	224 (49)	1,307 (49)	267 (49)
Females	1,419 (51)	236 (51)	1,377 (51)	274 (51)
Parent’s level of education, <i>n</i> (%)				
≤High school	771 (30)	167 (40)	731 (30)	198 (40)
>High school	1799 (70)	248 (60)	1,742 (70)	294 (60)
Avoidant coping category, <i>n</i> (%)				
1st Quartile (low), score = 0	1,128 (26)	117 (25)	1,109 (41)	127 (24)
2nd Quartile (mild), score = 1	896 (32)	159 (34)	852 (32)	196 (36)
3rd Quartile (moderate), score = 2	499 (18)	111 (24)	470 (18)	133 (25)
4th Quartile (high), score = 3+	263 (9)	74 (16)	253 (9)	85 (16)

at age 18. The second set of two models expressed the absolute probability of quitting smoking during the periods 18–20 (first model) and 20–28 (second model) as a function of the same variable. All probabilities ranged from 0 to 1 and were generated with Stata’s *prvalue* function, which uses the delta method to transform the logistic regression model coefficients of interest into probabilities while holding other adjustment covariates at their mean values. See our prior papers for more information about these probability models (e.g., Bricker et al., 2009). In addition to the probability models, we also provide readers the traditionally reported odds ratios from logistic regression models.

With each model, a Wald test for heterogeneity was used to assess the influence of avoidant coping at the quartiles of this measure. A Wald test for interaction was also used to examine the moderating effect of life stress. A linear test for trend was conducted by including an ordered variable (e.g., avoidant coping or stress) in the regression model as a continuous covariate to demonstrate if any monotonic relationship existed between the degree of avoidant coping and the probability of smoking escalation and cessation.

Covariates

All models adjusted for gender, parents’ highest level of education (less than high school [HS] and greater than or equal to HS), and the condition (i.e., control vs. experimental). In addition, all models accounted for intraclass correlations due to clustering within a school district by using Stata’s cluster variance estimation option. Per HSPP trial design specifications, all 40 districts had one HS per district (Peterson et al., 2000). Therefore, clustering by school district was analytically the same as that by HS. All statistical analyses were conducted with Stata Statistical Software (version 10.0).

Results

Probabilities of Smoking Escalation During the 18- to 20-Year Age Interval

As shown in Table 2, column two, participants scoring in the first quartile (i.e., low avoidant coping) had the lowest probability

(5.6%) of escalating during the 18- to 20-year age interval, whereas participants scoring in the fourth quartile (i.e., high avoidant coping) had an 11.3% probability of escalating during the 18- to 20-year age interval. The odds ratios indicate that there was a 2.52 (95% CI: 1.46–4.34) times higher odds of escalating for participants in the fourth quartile of avoidant coping than for those in the first quartile of avoidant coping. Supporting these findings, the test for heterogeneity (*p* = .001) indicated that there was an overall difference in the probabilities across the quartiles, and the test for linear trend (*p* < .001) indicated that the probabilities increase from the lowest to the highest quartiles.

All Other Probabilities

The probabilities of quitting smoking during the 18- to 20-year age interval ranged from 9.7% to 22.6% (Table 1, column three). The probabilities of escalating during the 20- to 28-year age interval ranged from 4.4% to 5.3% (column four). The probabilities of quitting smoking during the 20- to 28-year age interval ranged from 18.9% to 26.3% (column five). However, the Wald test and trend test showed no evidence of a difference in these probabilities. Finally, as shown across the bottom row, life stress did not have a significant moderating relationship with any of these predictions (all *p* > .05).

Discussion

Using ten years of longitudinal data (*N* = 3,305) with a retention rate of 98.5%, this study found support for Hypothesis 1’s 18- to 20-year age interval: 18-year-olds who scored high on the preliminary measure of avoidant coping were 2.52 times more likely to make the transition from less-than-daily smoking to at-least-daily smoking by age 20. However, there was no other support for Hypothesis 1. And there was no support for Hypothesis 2, which may be due to the life stress measure’s limitations and underpowered interaction tests. Generalizability is impacted by the sample being primarily Caucasian and originating from Washington State.

There are various explanations as to why the preliminary measure of avoidant coping at age 18 predicted smoking escalation

Table 2. The Probabilities and Odds of Escalation and Cessation, Given One's Level of Avoidant Coping

Avoidant coping at age 18	Smoking interval: 18–20 years Probability of influence (95% CI), OR (95% CI)		Smoking interval: 20–28 years Probability of influence (95% CI), OR (95% CI)	
	Escalation	Quit smoking	Escalation	Quit smoking
1 st Quartile (low) score = 0, n = 1,268	5.6% (3.9–7.2), –	19.2% (11.7–26.7), –	4.4% (3.1–5.7), –	26.3% (19.4–33.2), –
2 nd Quartile (mild) score = 1, n = 1,068	9.1% (6.5–11.6), 1.86 (1.27–2.73)	16.2% (11.4–21.1), 0.82 (0.46–1.46)	5.2% (3.4–6.9), 1.18 (0.50–1.91)	21.0% (16.7–25.3), 0.75 (0.48–1.16)
3 rd Quartile (moderate) score = 2, n = 625	9.3% (6.4–12.2), 1.86 (1.22–2.84)	9.7% (2.7–16.6), 0.45 (0.17–1.21)	4.7% (3.0–6.5), 1.07 (0.66–1.76)	24.3% (17.7–30.9), 0.90 (0.57–1.42)
4 th Quartile (high) score = 3+, n = 344	11.3% (6.6–16.0), 2.52 (1.46–4.34)	22.6% (10.2–35.0), 1.23 (0.52–2.91)	5.3% (2.4–8.2), 1.21 (0.62–2.39)	18.9% (10.3–27.4), 0.65 (0.35–1.23)
Analysis sample size	2,786	460	2,684	541
Wald's test	0.001	0.273	0.877	0.380
Test for trend	<0.001	0.859	0.582	0.320
Test for interaction with stress at age 18	0.593	0.828	0.571	0.927

Note. Data were included in the acquisition analyses if the study participant was not a daily smoker at the previous timepoint. Similarly, analyses of smoking cessation were conditional upon daily smokers at the previous follow-up timepoint. All models adjusted for the following covariates: gender, parents' highest level of education, experimental group, and school district. OR = odds ratio.

by age 20 but did not predict smoking escalation by age 28. First, the prospective relationship between avoidant coping and smoking may be altered by adult social role changes—for example, marriage and parenthood. Entering into these adult social roles may buffer, or even nullify, the relationship between avoidant coping and smoking. Second, the avoidant coping measure, while showing a promising predictive validity and factorial structure, was preliminary and lacked precision. Future research using a fully validated measure of avoidant coping (e.g., Carver et al., 1989; Herman-Stabl, Stemmler, & Petersen, 1995) is now needed as the next step to determine the prospective role of avoidant coping in young adult smoking.

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Declaration of Interests

None declared.

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