Brief Report

Characteristics of Alcoholic Smokers, Nonsmokers, and Former Smokers: Personality, Negative Affect, Alcohol Involvement, and Treatment Participation

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Abstract

Introduction: Previous research has indicated that smoking behavior in the general population is linked to personality traits such as behavioral undercontrol and negative emotionality, but it is unknown whether these traits pertain to alcoholic smokers. Further, prior research has not established whether alcoholic smokers differ from their nonsmoking counterparts in terms of alcohol involvement severity and treatment participation. Exploration of these associations is important, given the high prevalence of cigarette smoking among alcoholics.

Methods: Treatment-seeking alcoholics were categorized into daily cigarette smokers ($n = 76$), nonsmokers ($n = 34$), and former smokers ($n = 33$). These groups were compared on personality traits, negative affect, alcohol involvement, and alcohol outpatient treatment participation.

Results: All three groups scored similarly on a variety of personality traits (e.g., extraversion and neuroticism), and on most aspects of negative affect, with the exception of anxiety (smokers scored higher than nonsmokers and former smokers). In terms of alcohol involvement, alcoholic smokers reported greater negative drinking consequences and alcohol physical dependence relative to former smokers, even considering that alcoholic smokers had relatively more abstinent days. Finally, alcoholic smokers attended considerably fewer alcohol outpatient treatment sessions relative to both nonsmokers and former smokers.

Conclusions: Common risk factors for both alcoholism and smoking behavior, such as personality traits and negative affect, may obscure personality differences between smokers and nonsmokers in an alcohol treatment sample. Furthermore, findings suggest that current nicotine use among alcoholics is associated with greater anxiety and severity of alcoholism than among their former-smoking counterparts.

Introduction

Smoking behavior is related to negative emotionality and behavioral undercontrol (e.g., Etter, 2010; Kahler et al., 2009; McCann, 2010). Consistent with the personality findings describing the association between negative emotionality and smoking behavior, associations have been documented between cigarette smoking and negative affect (e.g., Anda et al., 1990; Bisol, Soldado, Albuquerque, Lorenzi, & Lara, 2010; Frederick, Frerichs, & Clark, 1988; Lyvers, Thorberg, Dobie, Huang, & Reginald, 2008). This literature indicates that smokers report greater depression, anxiety, anger, and stress relative to nonsmokers.

Although the prevalence of adult cigarette smoking has decreased dramatically since 1965 to a low of 19.3% in 2010 (Centers for Disease Control and Prevention, 2011), some populations continue to have disturbingly high rates of smoking. Among treatment-seeking alcoholics, the rate of smoking is as high as 80% (see Kalman, Kim, DiGirolamo, Smelson, & Ziedonis, 2010). Understanding the characteristics and vulnerabilities of alcoholic smokers has important implications for alcohol treatment and nicotine cessation interventions. Despite the wealth of research examining associations of smoking behavior with personality and negative affect in the general population, it is unclear whether these relationships extend to alcoholics. Further, it is not clear whether alcoholics who smoke differ from alcoholic nonsmokers on indices of alcohol involvement.

We hypothesized that smokers, relative to nonsmokers and former smokers, would score higher on neuroticism (an indicator of negative emotionality) and extraversion (an indicator of behavioral undercontrol). Although we had no hypotheses regarding the personality traits of openness, agreeableness, and conscientiousness, we included these in exploratory analyses. Second, we hypothesized that smokers would report higher levels of negative affect relative to nonsmokers. Third, we speculated that alcoholic smokers would report greater alcohol severity and participate less in treatment relative to nonsmokers.

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We tested these hypotheses via secondary analyses of data collected in a randomized clinical trial examining strategies to facilitate Alcoholics Anonymous involvement during alcoholism outpatient treatment (Walitzer, Dermen, & Barrick, 2009). Treatment did not include smoking cessation.

Methods

Clients met eligibility criteria (see Walitzer et al., 2009), including: (a) drinking during the past 3 months, (b) no mandate for treatment, (c) no intravenous drug use in the past 3 months, and (d) at least 18 years old. Clients were randomized to one of three 12-session, alcohol abstinence-oriented treatment conditions as detailed in Walitzer et al. (2009).

Assessments

Clients completed an in-person pretreatment assessment to evaluate:

Cigarette Use

Two questions determined smoking status: “have you ever smoked cigarettes” (“no, never” to “yes, have smoked five or more packs in my life”) and frequency of current cigarette smoking (“not at all” to “every day”).

Personality

The NEO Five-Factor Inventory assesses neuroticism, extraversion, openness, agreeableness, and conscientiousness (Costa & McCrae, 1992a, 1992b). Raw scores were converted to *T*-scores based on gender-specific norms (Costa & McCrae, 1992a).

Negative Affect

The Brief Symptom Inventory (BSI; Derogatis, 1993) assesses nine psychiatric symptom dimensions. Four subscales were selected for analysis: anxiety, hostility, phobic anxiety, and depression. The time frame for the assessment was “the past week” and responses ranged from 0, “not at all,” to 4, “extremely.”

Alcohol Involvement

The timeline follow-back interview (Sobell & Sobell, 1992) was used to gather daily drinking data. Percent days abstinent (PDA)

and percent days of heavy drinking (PDH; based on >6 standard drinks) were calculated for the 6-month pretreatment period.

Total score on the Drinker Inventory of Consequences (DrInC; Miller, Tonigan, & Longabaugh, 1995) was used to assess negative effects of alcohol use during the previous 6 months. Response choices ranged from “never” (0) to “daily or almost daily” (3).

The Alcohol Dependence Scale (ADS; Skinner & Allen, 1982) assessed severity of dependence on alcohol.

Treatment Participation

The number of treatment sessions attended of the possible 12 was determined.

Data Analysis

The sample was divided into “nonsmokers,” “former smokers” (i.e., quitters), and “smokers.” Two-way analyses of variance (ANOVAs) examined effects of smoking status, client gender, and their interaction on alcohol involvement (PDA, PDH, DrInC, and ADS), affect and psychiatric symptoms (the four negative affect BSI subscales), and personality (the five NEO scales). Treatment attendance was examined via two-way ANOVA, and for this analysis, treatment condition was included as a covariate. Bonferroni corrections were applied as appropriate followed by Duncan’s tests of means.

Results

Demographics of the sample are presented in Table 1. Thirty-four clients indicated they had “never” ($n = 21$), “only once” ($n = 5$), or only “a few times” ($n = 8$) smoked cigarettes in their lifetime, currently smoked no cigarettes per day, and comprise the “nonsmoking” group. Thirty-three clients indicated they had smoked “five or more packs” in their lifetime, currently did not smoke, and comprise the “former smoking” group. Finally, 76 clients reported current daily smoking and comprise the “smoking” group. (Twenty-six clients were nondaily, but current, smokers and thus could not be categorized via these criteria and were dropped from analyses.) Exploratory analyses (3×2 , Smoking Status

Table 1. Participant Characteristics as a Function of Smoking Status

Variable	Nonsmokers, $n = 34$	Former smokers, $n = 33$	Smokers, $n = 76$
	% or M (SD)	% or M (SD)	% or M (SD)
Age	44.50 (9.75)	50.76 (11.88)	41.47 (10.39)
Female	26.5	30.3	38.2
Marital status			
Married/cohabiting	58.8	69.7	36.8
Single, never married	17.6	6.1	25.0
Other status	23.5	24.2	38.2
Racial background			
White	94.1	93.9	82.9
Black	2.9	6.1	14.5
Other	2.9	0.0	2.6
Employment			
Employed	70.6	72.7	60.5
Unemployed	20.6	9.1	19.7
Other	8.8	18.2	19.7

[nonsmokers, former smokers, smokers] $\times$ Gender ANOVAs and Duncan's tests of means) indicated a significant main effect for smoking status, $F(2, 142) = 6.11, p < .01$ on client age. Post hoc tests indicated former smokers were significantly older than nonsmokers or smokers ($p < .05$; see Table 1). A 3×3 chi-square test (Smoking Status $\times$ Marital Status [married/cohabiting, single/never married, other {combined widowed, divorced, separated}]) indicated that marital status was distributed significantly differently across the three smoking groups, $\chi^2(4) = 12.47, p < .05$. Post hoc chi-square tests reveal nonsmokers and former smokers were more likely to be married/cohabiting (60.6%) versus current smokers (36.8%); $\chi^2(1) = 10.64, p < .01$. No other demographic variable yielded a significant effect for smoking status.

Effects of Smoking Status

Table 2 displays client characteristics and ANOVAs results evaluating the effect of smoking status. No main effects were found for gender or for a Smoking Status $\times$ Gender interaction; thus, Table 2 collapses across gender. All significant findings were replicated in analyses that included client age as a covariate (as age significantly differed as a function of smoking status).

Personality

None of the five NEO personality scales yielded a significant smoking status effect.

Negative Affect

For the four BSI subscales, two met the $p < .05$ criterion for significance (anxiety and phobic anxiety) and one met the Bonferroni-adjusted criterion (anxiety). As shown in Table 2, alcoholic smokers reported greater anxiety relative to nonsmokers

and former smokers. The means for the BSI scales suggest that participants reported relatively low levels of negative affect, generally in the "not at all" (i.e., 0.0) to "a little bit" (i.e., 1.0) range.

Alcohol Involvement

Although three variables of the four evaluated met the traditional criterion for statistical significance, two dependent variables—physical dependence on alcohol and recent alcohol negative consequences—met the Bonferroni-adjusted criterion. Post hoc tests revealed that current smokers were both more dependent on alcohol and reported more consequences relative to former smokers.

Treatment Participation

Table 2 presents results for smoking status with treatment sessions attended, controlling for treatment condition. Alcoholic smokers attended significantly fewer alcohol outpatient sessions relative to their nonsmoker and former smoker counterparts.

Discussion

Our findings suggest that treatment-seeking alcoholic smokers have similar personality characteristics to alcoholic nonsmokers and former smokers. Our failure to support the hypothesis that alcoholic smokers are more behaviorally undercontrolled (i.e., extraversion) and have greater negative emotionality (i.e., neuroticism) relative to alcoholic nonsmokers may be related to the characteristics of the alcoholic sample. Characteristics held in common by smokers and alcoholics may obscure personality differences related to smoking status in an alcoholic sample. The alcoholic smokers in our sample did, however, report significantly greater levels of anxiety relative to nonsmokers and

Table 2. Personality, Negative Affect, Alcohol Involvement, and Treatment Participation as a Function of Smoking Status

Dependent variable	Nonsmokers, $n = 34$ <i>M</i> (<i>SD</i>)	Former smokers, $n = 33$ <i>M</i> (<i>SD</i>)	Smokers, $n = 76$ <i>M</i> (<i>SD</i>)	Smoking status <i>F</i> test
Personality ^a				
Neuroticism	54.51 (13.75)	55.93 (11.43)	57.21 (10.75)	0.45, $p = .641$
Extraversion	46.98 (13.64)	49.55 (12.43)	50.88 (10.47)	1.74, $p = .179$
Openness	51.24 (10.59)	50.89 (11.03)	51.65 (10.85)	0.33, $p = .721$
Agreeableness	47.50 (12.18)	47.18 (10.76)	46.34 (12.51)	0.49, $p = .617$
Conscientiousness	43.86 (13.10)	43.67 (12.08)	43.15 (11.18)	0.20, $p = .823$
Brief Symptom Inventory subscales ^b				
Anxiety	0.57 ^A (0.75)	0.56 ^A (0.57)	1.05 ^B (0.90)	5.71, $p = .004$
Hostility	0.72 (0.67)	0.68 (0.56)	0.92 (0.72)	2.53, $p = .084$
Phobic anxiety	0.26 (0.68)	0.18 (0.32)	0.53 (0.79)	3.08, $p = .049$
Depression	0.99 (0.96)	0.87 (0.77)	1.30 (1.03)	1.67, $p = .191$
Alcohol involvement ^c				
Percent days abstinent	40.06 (29.22)	23.86 (26.99)	38.38 (29.35)	3.49, $p = .033$
Percent days heavy	24.79 (28.71)	31.35 (32.88)	34.89 (32.41)	1.15, $p = .319$
Alcohol consequences	40.30 (25.68)	31.79 ^A (18.31)	47.23 ^B (22.01)	5.32, $p = .006$
Physical dependence	13.94 (8.97)	11.15 ^A (7.22)	16.67 ^B (7.48)	5.61, $p = .005$
Sessions attended ^d	8.00 ^A (4.35)	9.33 ^A (3.95)	5.45 ^B (4.69)	10.59, $p = .001$

Note. Means with different capitalized superscript letters are significantly different at $p < .05$.

^aThe Bonferroni-adjusted p value for the five personality measures is .01.

^bThe Bonferroni-adjusted p value for the four affect-related Brief Symptom Inventory subscales is .013.

^cThe Bonferroni-adjusted p value for the four alcohol involvement measures is .013.

^dThe analysis for the number of treatment sessions attended included treatment condition as a covariate.

former smokers, although the overall level of reported anxiety in all groups was relatively low. Interestingly, this smoking status effect did not extend to the measures of depression and hostility; these negative affect measures were similar across smoking status groups. In a similar vein, previous research has linked smoking specifically to anxiety disorders, even after controlling for depression and substance abuse comorbidity (Cougle, Zvolensky, Fitch, & Sachs-Ericsson, 2010). These data suggest that anxiety may be particularly relevant to smoking status.

The alcohol involvement and smoking status findings are striking. Smokers, relative to former smokers, reported greater negative consequences and more severe physical dependence (with nonsmokers' scores generally falling between these two groups). Although not reaching the more stringent level of statistical significance, there was some contrasting evidence that smokers reported more abstinent days (i.e., fewer drinking days) relative to former smokers. Thus, the smokers' reports of greater alcohol consequences appear to be in the context of less frequent drinking. One interpretation of this pattern of findings is that comorbid nicotine involvement with alcoholism is associated with more severe alcohol symptoms, relative to just alcoholism alone. This is consistent with research suggesting that nicotine and ethanol may have synergistic effects (see Campbell, Taylor, & Tizabi, 2006; Lapin, Maker, & Bhardwaj, 1995), and therefore, smoking in conjunction with alcoholism may create a causal biological mechanism contributing to more severe alcoholism. A second interpretation is that nicotine and alcohol abuse may share common vulnerability pathways to addictions, such that the comorbid abuse of these substances represents the more severe forms of the combined disorders. Morisano, Bacher, Audrain-McGovern, and George (2009) put forth this hypothesis and suggest that shared biological, genetic, and environmental vulnerabilities to each disorder may contribute to comorbidity. In either case, it appears clear that in this sample of alcoholics, smokers reported greater alcohol consequences and physical dependence relative to former smokers and in the presence of more frequent abstinent days. Interestingly, data exist, which suggest that the converse may be true as well—that smokers with alcohol dependence may exhibit more severe nicotine dependence than nonalcohol dependent individuals (Hughes, 1996; Kahler et al., 2010). At a minimum, our findings suggest that smoking status may be a marker for severity of alcohol dependence and symptoms in alcoholics.

Interestingly, alcoholic smokers attended substantially fewer treatment sessions relative to both nonsmokers and former smokers. Greater problem severity among the alcoholic smokers may cause them to be more likely to drop out of outpatient treatment, or perhaps alcoholic smokers find the nonsmoking treatment environment too restrictive (even for the relatively short periods of enforced abstinence). Regardless of possible interpretations for this finding—that alcoholic smokers participated on average in less than one-half of the outpatient treatment sessions, whereas nonsmokers and former smokers participated on average in two-thirds of sessions or more—this treatment dropout is cause for concern. It suggests that the most severe alcoholics, the alcoholics who smoke, typically avail themselves of the fewest outpatient treatment sessions.

These findings should be viewed with several caveats. The sample is predominantly White, and treatment took place in an

outpatient setting. Clients who were mandated to treatment were excluded from participation in the study. Caution should be used before generalizing to other populations of alcoholics or alcoholics who are not enrolled in treatment. Also, our assessment of nicotine involvement was brief and relatively narrow. Categorization based on nicotine dependence, such as with the Fagerström Test for Nicotine Dependence (Fagerström, 1978), may have yielded a different pattern of results.

Conclusions

The rate of smoking was profoundly elevated in this sample of treatment-seeking alcoholics—45% were daily smokers. Alcoholic smokers scored similarly to nonsmokers and former smokers in terms of personality. For current negative affect, only one significant difference was found—smokers reported higher levels of anxiety than did nonsmokers and former smokers. Interestingly, alcoholic smokers reported greater alcohol involvement severity in terms of negative consequences and alcohol physical dependence, relative to former smokers, and in the context of relatively less frequent drinking. Similarly, alcoholic smokers attended considerably fewer alcohol outpatient treatment sessions relative to both nonsmokers and former smokers. These findings suggest that comorbid nicotine use and alcoholism may contribute to a greater severity of alcoholism than that displayed by alcoholic former smokers and that smokers are at risk for deriving less benefit from treatment as a result of attending fewer sessions.

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Declaration of Interests

None.

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