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Experimenting and daily smokers: Episodic patterns of alcohol and cigarette use

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Abstract

Alcohol use may facilitate the development of nicotine dependence. Alcohol is often paired with cigarette smoking, particularly in those experimenting with smoking. However, little research has examined episodic patterns of alcohol and cigarette use. This study examined patterns of alcohol and cigarette use in a college-aged sample ($n=237$) designated as experimenters or smokers based on their smoking history. Participants reported their consumption of drinks and cigarettes by hour, for each hour, of a typical drinking and smoking episode. Self-reported pleasure and desire associated with smoking generally and while drinking was assessed. No group difference was observed in total number of drinks. However, experimenters delayed smoking until more drinks were consumed, suggesting they smoked after reaching binge levels of alcohol. By contrast, smokers smoked after fewer drinks. Both groups reported increased smoking while drinking and increased pleasure and desire when smoking while drinking. The increase was greater in experimenters. Concurrent alcohol and cigarette use may facilitate the development of tobacco dependence and interventions interrupting their pairing might impede the transition from experimenter to smoker.

Keywords

Alcohol; Cigarettes; Binge drinking; Smoking

1. Introduction

An estimated 23.6% of young adults aged 18–24 years are smoking daily (CDC, 2005) and smoking is associated with increased alcohol use (e.g., Harrison, Desai, & McKee, 2008). Alcohol use has been identified as a risk factor for the development of nicotine dependence in young adults (e.g., Sher, Gotham, Erickson, Wood, 1996). A significant proportion of smokers consolidate their smoking patterns during young adulthood (e.g., Chassin, Presson, Pitts, & Sherman, 2000), and alcohol may facilitate the transition to daily smoking. Most non-daily young adult smokers report they primarily smoke when drinking alcohol, and that they experience increased pleasure from cigarettes and increased desire for cigarettes when drinking alcohol (McKee, Hinson, Rounsaville, & Petrelli, 2004).

Typical episodic patterns of drinking and smoking in young social drinkers are largely unknown. The purpose of the present study was to characterize their patterns of alcohol and cigarette use. Young adult social drinkers who had smoked cigarettes in the past year completed questionnaires and self-report measures about their alcohol and cigarette use. They reported

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the typical timeline of alcohol and cigarette use during a drinking and smoking episode. Differences between experimenters and smokers were analyzed. Experimenters were those who smoked less than 100 cigarettes in their lifetime, whereas smokers had smoked 100 cigarettes or more in their lifetime (U.S. Department of Health and Human Services, 1990).

2. Method

2.1. Participants

Participants were 237 (63.2% female) undergraduate students enrolled in an introductory psychology course at the University of Western Ontario who reported smoking in the past year. All volunteers provided informed consent for their participation. Mean age was 19.22 years ($SD=1.15$) and the majority was Caucasian (70%). Participants completed the questionnaires in a mixed-sex group format (maximum of 20 individuals per session).

2.2. Measures

2.2.1. Tobacco and alcohol use—Participants reported their past year frequency and quantity of cigarette and alcohol use. Respondents were asked their age at first full cigarette and whether they had smoked more or less than 100 cigarettes in their lifetime. The Fagerström Test of Nicotine Dependence (Heatherton, Kozlowski, Frecker, & Fagerström, 1991) was used to assess nicotine dependence (range 1–10). The Alcohol Use Disorders Identification Test (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) was used to assess alcohol use disorders (range 0–40; scores of 8 or greater indicate problematic drinking).

2.2.2. Typical drinking and smoking episode—Participants estimated what percentage of their smoking occurred while under the influence of alcohol. Participants were asked to “think about a typical drinking episode in which you smoked cigarettes” in the past year. Participants reported, by hour, for up to an 8-hour period, how many standard alcohol drinks they typically consumed and how many cigarettes they typically smoked in a typical drinking and smoking episode. A standard drink was defined as “12 oz bottle of beer, or 1.5 oz of liquor, or 5 oz wine”. Using this self-report information we obtained the number of drinks consumed before smoking and the number of hours that passed before smoking in a typical drinking and smoking episode.

2.2.3. Smoking expectancies—On nine-point Likert scales (1=strong decrease, 9=strong increase), participants responded to items assessing how their smoking changed while drinking, and their pleasure and desire for smoking, generally, and while drinking (McKee et al., 2004).

2.3. Data analysis

Experimenters and smokers were compared using chi-square or *t*-tests for differences on baseline demographic, smoking, and drinking variables. Analyses of variance were conducted to examine the effect of smoking history (experimenters vs. smokers) on total number of drinks and cigarettes, duration of a typical episode, drinks before smoking and hours before smoking, and whether smoking increases during alcohol consumption. Repeated measures analyses of variance were used to examine between-subject effects of smoking history (experimenters vs. smokers) and within-subject self-reported levels of pleasure and desire associated with smoking (generally vs. while drinking).

3. Results

3.1. Baseline smoking and alcohol use

Experimenters and smokers were compared on baseline variables and patterns of alcohol and cigarette use, as shown in Table 1.

3.2. Drinking and smoking episode

Experimenters and smokers were compared regarding their patterns of alcohol and tobacco use in a typical drinking and smoking episode (see Table 1). Age was used as a covariate in all analyses. Experimenters and smokers differed on total number of cigarettes smoked, $F(1, 237) = 113.48, p < .001$, but did not differ on the total number of drinks reported or on the typical duration of an episode, $ps > .44$. Experimenters reported consuming more drinks before smoking than did smokers, $F(1, 237) = 61.70, p < .001$. Experimenters reported longer wait periods before smoking than did smokers, $F(1, 237) = 117.57, p < .001$.

3.3. Smoking expectancies

Both experimenters and smokers reported that their smoking increases when they drink alcohol (mean = 7.71, SD = 1.23). No group difference was observed, $F(1, 236) = 2.33, p = .13$.

Experimenters' and smokers' ratings of pleasure from and desire for cigarettes, both generally and while drinking alcohol, are plotted in Fig. 1. Significant interactions between smoking history and context (smoking generally or while drinking alcohol) were observed, $ps < .001$. For both groups, drinking increased reports of pleasure from and desire for cigarettes ($ps < .001$), however this change was greater for experimenters compared to smokers.

4. Discussion

The present study examined the episodic patterns of alcohol and cigarette consumption of experimenters and smokers. Two distinct patterns of cigarette use emerged, based on smoking history. Smokers typically started smoking after only 2 drinks. Experimenters, by comparison, delayed smoking initiation until they had consumed on average 4.6 drinks. Individuals with little smoking experience were initiating smoking behavior after consuming alcohol at levels that are considered binge drinking (+5/4 drinks men/women; Wechsler & Kuo, 2000).

Alcohol has been highlighted as a risk factor for the development of nicotine dependence. Alcohol and smoking are often paired activities (e.g., McKee et al., 2004). In the present study, both experimenters and smokers reported their smoking increases when they drink alcohol, providing additional evidence that alcohol influences smoking. Alcohol substantially increased the pleasurable and desirable effects of smoking in experimenters, to the extent that they might not typically enjoy smoking when alcohol is not involved. Indeed, experimenters in the present study reported that the majority of their smoking occurs when they drink.

Possible limitations include the use of self-reports. Results may not generalize to a U.S. sample because binge drinking rates are higher among U.S. college students than among Canadian college students (Kuo et al., 2002). Smokers in this sample were not heavily nicotine dependent, which is typical for a college student population (Sledjeski et al., 2007).

The present study provides information regarding actual patterns of alcohol and cigarette use in young social drinkers. Knowledge of these patterns could lead to more efficacious prevention and intervention measures, such as smoking bans. Interventions which disengage alcohol and cigarette use patterns may postpone or possibly even prevent the transition to regular smoking

status. Continued research examining actual patterns of alcohol and cigarette use and the mechanisms that drive these patterns is warranted given that their use is often paired.

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Fig. 1.

Top panel presents pleasure from cigarettes generally and while drinking by smoking history. Bottom panel presents desire for cigarettes generally and while drinking by smoking history. Error bars indicate the standard error of the mean. * $p < .01$.

Table 1

Differences between experimenters and smokers on baseline variables, patterns of alcohol and tobacco use, and episodic patterns of alcohol and cigarette use ($n=237$)

Variables	Experimenters ($n=93$)	Smokers ($n=144$)
Baseline characteristics		
Sex		
Female	61 (65.6%)	90 (62.5%)
Male	32 (34.4%)	54 (37.5%)
Age (years)	18.98 (0.71) *	19.38 (1.35)
Age at first cigarette (years)	14.95 (2.14) *	13.94 (1.77)
Age at first alcohol (years)	15.62 (1.37) *	15.04 (1.61)
First-year students (%)	88.20%	83.30%
Fagerström score	0.13 (0.45) *	1.19 (1.62)
AUDIT score	7.28 (4.95)	7.54 (4.59)
Weekly frequency of alcohol use (days)	2.84 (1.10)	2.90 (1.24)
Weekly frequency of cigarette use (days)	0.70 (0.91) *	4.20 (2.80)
Weekly alcohol	16.28 (10.06)	17.23 (11.62)
Weekly cigarettes	1.81 (3.05) *	29.19 (31.73)
Smoking episodes while drinking (%)	89.00%	62.60%
Episodic patterns ^a of alcohol and cigarette use		
Total drinks	7.06 (0.29)	7.50 (0.28)
Total cigarettes	1.83 (0.12) ^	7.99 (0.45)
Total duration (h)	4.73 (0.13)	4.80 (0.11)
Drinks before smoking	4.62 (0.29) ^	2.11 (0.17)
Hours before smoking	2.35 (0.12) ^	0.92 (0.07)

Percentage or mean (with standard error in parentheses) are presented.

* $ps < .01$;

^ $ps < .001$;

^a All episodic patterns analyses included age as covariate.