

Cigarette Smoking and Chewing-Gum Use Among College Students

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Smoking cessation treatment programs may be more successful if satisfactory behavioral alternatives for smoking were identified. Chewing gum has been identified as one such simple alternative reinforcer. Marketing trends encourage smokers to chew gum when they cannot smoke; however, there is little empirical research examining the smoking–chewing gum relationship. The current study examines the relationship among cigarette smoking and chewing gum use in 584 college students. Analyses indicate that nonsmokers are more likely to chew gum than smokers. Additionally, the data suggest a dose-dependent *trend*: the heavier smoker one is, the less likely one is to chew gum. Chewing gum may be a viable alternative reinforcer to cigarette smoking, particularly in situations where smoking is prohibited.

The link between chronic cigarette smoking and serious medical illnesses, such as cancer, emphysema, coronary heart disease, stroke, and obstructive pulmonary heart disease, are well documented (Epstein & Jennings, 1986). However, despite the recognition that smoking is a key factor (if not the major causal factor) in developing one of these diseases, many individuals continue to smoke. Smoking cessation could prevent a large number of deaths each year and delay the onset of a great number of these life-threatening illnesses. However, while two thirds of American adult smokers wish to quit smoking, for every smoker who successfully quits, nine others try and fail (Kessler, 1994). Identifying strategies that will help smokers cope with urges to smoke during periods of abstinence may help make smoking cessation programs more successful.

One such strategy that has been used to help in cessation efforts is chewing gum. Marketing promotions have suggested a link between cigarette smoking and chewing gum. In fact, the largest chewing-gum manufacturer, William

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Wrigley, Jr., Co., advertises, "When you can't smoke, chew gum." However, there is little empirical data to support the smoking–chewing gum relationship.

Laboratory studies have demonstrated that simple alternative reinforcers, such as chewing gum, may influence smoking behavior. Cohen, Collins, and Britt (1997) provided smokers access to chewing gum in situations where smoking was prohibited and demonstrated significant decreases in cravings for cigarettes and reductions in withdrawal symptoms as compared to smokers who did not have access to chewing gum. A second laboratory study examined smoking behaviors when smokers were given small incentives not to smoke. Results indicated that chewing gum lengthened the latency to the first cigarette and decreased the number of puffs smoked (Cohen, Britt, Collins, Stott, & Carter, in press). Researchers are not suggesting that chewing gum alleviates craving or withdrawal; rather, evidence suggests that chewing gum may reduce these symptoms and alter smoking behavior in dependent smokers.

Findings from recent studies suggest that chewing gum may serve as an alternative to cigarette smoking in situations where smoking is restricted. While laboratory data seems promising, little is known about the relationship between smoking and chewing gum in the general population. The present study examines the relationship between cigarette smoking and chewing gum in a college student sample. In particular, the present study focuses on potential differences in chewing-gum use among smokers and nonsmokers, and proposes that nonsmokers will be more likely to chew gum than smokers.

Method

Subjects

Male and female volunteers were recruited from undergraduate psychology classes at Oklahoma State University. Included in the analyses were 584 subjects (233 males, 349 females, 2 unknown) who provided complete data. The mean age of participants was 20.53 years (range = 18 to 52 years).

Materials and Procedures

Subjects completed the Habits Use Questionnaire (HUQ; Britt, 1996), a self-administered questionnaire developed by the first author, in a group setting and received extra credit for their participation. The HUQ assesses an individual's consumption of various oral substances, including cigarette smoking, alcohol, coffee, tea, soda, and chewing-gum use. Patterns of consumption (e.g., frequency of use and amount typically consumed) were obtained for each substance. Sample items included how often subjects smoked cigarettes and chewed gum, preferred brand of cigarettes and gum, and reasons for smoking and chewing gum.

Table 1

Smoking Status by Chewing Gum Status

	Non-gum chewer	Gum chewer
Nonsmoker	56 (11.8%)	417 (88.2%)
Moderate smoker	13 (14.4%)	77 (85.6%)
Heavy smoker	8 (38.1%)	13 (61.9%)

Note. $\chi^2(2, N = 584) = 12.26, p < .01$.

Results

Subjects were divided into three cigarette smoking categories (non-, moderate, or heavy smoker) and two gum categories (gum chewer or non-gum chewer). Over 80% ($n = 473$) of participants were nonsmokers, 15.4% ($n = 90$) were moderate smokers (15 or less cigarettes daily), and 3.6% ($n = 21$) were heavy smokers (16 or more cigarettes daily). Nearly 87% ($n = 507$) of the current sample reported at least occasionally chewing gum.

A chi-square analysis was conducted to examine the relationship of overall smoking status (non-, moderate, or heavy smoker) and chewing-gum status (non-gum chewer or chewer). A significant association between smoking status and chewing-gum status was detected, $\chi^2(2, N = 584) = 12.26, p < .01$ (Table 1).

Orthogonal analyses were then conducted to determine the source of this relationship. First, analyses were conducted comparing smokers and nonsmokers. Individuals originally classified as either moderate or heavy smokers were reclassified as "smokers." As expected, a significantly larger percentage of nonsmokers reported being gum chewers than did smokers, $\chi^2(1, N = 584) = 3.94, p < .05$ (Table 2). Second, analyses were conducted to compare gum use among moderate and heavy smokers. Again, a significant association was detected, $\chi^2(1, N = 111) = 6.21, p < .05$, indicating that a significantly larger portion of moderate smokers reported being gum chewers compared to heavy smokers (Table 3).

Discussion

The hypothesis that smokers and nonsmokers differentially use chewing gum was confirmed. Nonsmokers are much more likely to chew gum than smokers. Additionally, these analyses suggest a possible trend to this relationship: the heavier smoker one is, the less likely one is to chew gum. Studies with larger numbers of moderate and heavy smokers are needed to examine such a trend.

Table 2

Gum Status Among Smokers and Nonsmokers

	Non-gum chewer	Gum chewer
Nonsmoker	56 (11.8%)	417 (88.2%)
Smoker	21 (18.9%)	90 (81.1%)

Note. $\chi^2(1, N = 584) = 3.94, p < .05$.

Table 3

Gum Status Among Moderate and Heavy Smokers

	Non-gum chewer	Gum chewer
Moderate smoker	13 (14.4%)	77 (85.6%)
Heavy smoker	8 (38.1%)	13 (61.9%)

Note. $\chi^2(1, N = 111) = 6.21, p < .05$.

Data from the current study suggest that nonsmokers may be using chewing gum as a source of reinforcement, as smokers utilize cigarettes for reinforcement. However, these data, coupled with recent laboratory studies, suggest that for smokers who chew gum, chewing gum may be a viable alternative to cigarette smoking, particularly in situations where smoking is prohibited. Recent studies have shown that chewing gum helps reduce craving and nicotine withdrawal when a nicotine-dependent person cannot smoke (Cohen, 1998; Cohen et al., 1997). Chewing gum also has been found to be a viable alternative to smoking in stressful situations (Britt, 1998). Cessation interventions that train smokers to identify alternatives to smoking when confronted with urges to smoke or when exposed to stress may be a valuable supplement to current treatments.

In spite of such interesting findings, this study is not without limitations. Data from the current study were based on young college students and thus may not generalize to other populations. It has been noted that university students exhibit different smoking behavior compared to their noncollege peers, as educational level has been linked to smoking behavior (National Institute on Drug Abuse, 1994). The extent to which these findings apply to heavier smokers who are older has yet to be determined. Additionally, participants in this study reported chewing gum at least occasionally; however, some people cannot or do not chew gum. In addition, chewing-gum use declines with age (O'Connor, O'Mullane, & Whelton, 1993), thus generalizability of the beneficial qualities of chewing gum

has yet to be examined in other populations. Conclusions drawn from this study are limited to smokers who can chew gum as an alternative to smoking.

Despite the limitations noted above, this study does have strong merits. First, the present study is unique in that the research instrument used in this study assessed use and consumption patterns of various substances in almost identical formats. This is one of the few studies employing such standardization in obtaining data on substance use. This not only facilitated subject completion of the questionnaires, but allowed drugs to be compared in similar fashions. Second, despite the small numbers of subjects in some groups, power analyses provides researchers with confidence in the current findings.

The current study does not suggest that chewing gum is a good substitute for smoking. However, these results coupled with previous studies demonstrate that chewing gum can be an effective alternative to smoking during brief periods of abstinence. Numerous smoking cessation programs have informally incorporated chewing gum and other alternative behaviors into their treatment programs as something to do in lieu of smoking. The present study is the first systematic attempt to examine the naturally occurring relationship among cigarette smoking and chewing gum. These data combined with data from recent laboratory studies suggest that chewing gum may be an effective coping strategy for dealing with abstinence. Identification of acceptable behavioral alternatives to cigarette smoking can reduce the number of smokers who relapse and help teach smokers more effective ways of coping in the absence of smoking. Future studies should consider the role of chewing gum and other alternative reinforcers in drug use.

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