THE RELATIONSHIP BETWEEN ALCOHOL USE AND ATTEMPTS AND SUCCESS AT SMOKING CESSION

RICK S. ZIMMERMAN, GEORGE J. WARHEIT, and PATRICIA M. ULBRICH
University of Miami

JOANNE BUHL AUTH
University of Florida Health Center

Abstract — This study assessed the relationships between alcohol use and smoking cessation in a general population sample (N = 2115) of adults living in a county in north Florida. Nearly half of the sample had ever smoked. Of these, 44% had successfully quit; 58% had tried unsuccessfully to quit; 21% reported never having tried to quit. In multivariate analyses which controlled for background factors, heavy drinkers were found to be less likely to attempt to quit smoking. And, if they had attempted to quit, they were less likely to succeed. Having quit drinking was very strongly related to success at smoking cessation, and slightly negatively related to attempts to quit smoking. Individuals who enjoyed smoking with alcohol were more likely to attempt to quit smoking and to be successful at quitting than those who did not enjoy smoking and drinking concurrently. Those who enjoyed smoking at stressful times were less likely to have tried to quit than those not using smoking to cope with stress. The authors suggest social-situational and stress perspectives as conceptual frameworks for future research.

As public health education campaigns go, the one to persuade Americans to stop smoking has been relatively successful. Between 1965 and 1985, the percentage of adults in the United States who said they smoke decreased by nearly one-third (USDHHS, 1986). Convincing individuals to quit remains a significant problem, however, as over one-fourth of the adult population still smoke. Most people who have quit smoking have done so “on their own,” that is, without the help of organized groups or programs (Schwartz, 1987). Estimates of proportions of smokers who have tried to quit on their own range from slightly over 50% to over 75% (Horn, 1978; USDHHS, 1983). Factors found to be related to quitting include the amount currently smoked (cf. McArthur, Waldron, & Dickinson, 1958), age of starting smoking (Ross, 1967), expectation of success at quitting (Davis & Glaros, 1986), and self-efficacy (Topton & Riebsame, 1987). Situations in which those who have quit smoking “relapse” are social ones and/or anxiety-provoking situations (Marlatt & Gordon, 1983; Shiffman, Read, & Jarvis, 1984).

From a public health intervention perspective, a basic yet largely unaddressed question concerns the relationship between alcohol use and smoking cessation. Our major contention in this paper is that a better understanding of this relationship may assist researchers and health educators in understanding the processes and predictors of smoking cessation. In addition, the research findings presented may be of value for targeting groups of individuals for smoking cessation programs.

Most studies that have assessed the relationship between alcohol use and smoking have focused on concurrent use, generally with a positive relationship found between the two behaviors (István & Matarasso, 1984). The most consistent finding in these studies is that individuals who are heavy drinkers tend to be cigarette smokers, generally two to three times

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Requests for reprints should be sent to Rick Zimmerman, Department of Sociology, University of Miami, P. O. Box 248162, Coral Gables, FL 33124.
as often as are nondrinkers (e.g., Craig & Van Natta, 1977). Other research has found that individuals who smoke or previously had smoked were more likely to be heavy drinkers (cf. Carmody, Brischetto, Matarazzo, O'Donnell, & Connor, 1985; Newcomb, Maddahian, & Bentler, 1986). It may also be the case that individuals often under the influence of alcohol may have less ability to cope with the difficulties of quitting smoking.

The first two hypotheses to be tested in this study are based on research on the relationship between alcohol use and smoking:

1. Heavy users of alcohol will be less likely to attempt to quit and less likely to be successful if they do try.
2. Individuals who have quit using alcohol will be more successful at quitting smoking if they attempt to do so.

Research on "smoking relapse" may be helpful in suggesting theoretical underpinnings for research in this area. Work by Marlatt and Gordon (1985) and by Shiffman (1986; Shiffman et al., 1984) has uncovered categories of situations in which individuals may be most likely to fall back to smoking after a period of quitting. These include social pressure (situations in which social drinking and/or exposure to smoking occurs), relaxation (e.g., after meals), times of emotional distress, and interpersonal conflict. These findings suggest that at least two conceptual frameworks may be applied toward an understanding of the relationship between alcohol use and smoking cessation — the social-situational approach and the stress model.

The social-situational approach emphasizes the various uses (e.g., relaxation, stress-reduction, and social approval) to which alcohol and smoking are put by certain individuals (Hill, 1971). In addition, the synergistic effect of one behavior on the other in social situations may be especially important. We expect that individuals who smoke when drinking (perhaps social smokers) would find it easier to quit smoking, as they may continue to use drinking alone to meet the needs that drinking and smoking together were previously meeting in the social situation. The third hypothesis is based on the social situational perspective:

3. Individuals who drink and smoke in social situations will find it easier to quit smoking, given an attempt, than individuals who do not engage in both together.

Hypothesis 3 may appear to contradict Hypothesis 1, which suggested that heavy drinkers will find it more difficult to quit smoking. As proposed here, we are not claiming that simply combining smoking and alcohol in any fashion will lead to greater difficulty in quitting. Heavy alcohol use is expected to lead to fewer attempts at quitting and greater difficulty at it, and the joint social behavior is expected to be related to greater success, given an attempt. Those who combine the two socially may be less addicted to both than are heavy drinkers, who also are more likely to drink alone.

Stress has been shown to be related to the maintenance and regulation of smoking, to be a barrier to quitting, and to be a significant factor in relapse among those who have attempted to quit (Abrams et al., 1987; Aneshensel & Huba, 1983). Stress has also been shown to be a major correlate of occasions of alcohol consumption and/or abuse (Abrams, 1983). We expect that individuals who enjoy smoking to reduce stress will find it especially difficult to quit smoking, particularly if stressful situations arise. The fourth hypothesis is based on the stress perspective:

4. Individuals who smoke during stressful periods will find it more difficult to make a serious attempt at quitting and be less successful at it if they do try.

The purpose of the present study is to describe the pattern of the relationships between
alcohol use and smoking cessation in the general population, that is, under largely self-help rather than constructed intervention conditions. An important distinction among smoking cessation behaviors is made in this paper. We distinguish attempts at quitting from (maintained) success at quitting. Just as initiating smoking is a different process from quitting smoking, trying to quit and being successful at it may have different sets of precursors (cf. Prochaska & DiClemente, 1983; Leventhal & Cleary, 1980).

We also take a multivariate approach in this study, in contrast to many other studies of smoking cessation. By statistically controlling for a variety of smoking history and demographic variables, we reduce the possibility of potentially confounded interpretations of the results.

METHODOLOGY

Sample

The data reported in this paper were obtained as part of an epidemiological field survey of the general population. The research was designed to determine the prevalence of alcohol consumption and other drug use and to determine the health, mental health, and social consequences for different social and demographic groups. A multi-staged, statistical probability sample of persons 18 and older residing in a Metropolitan Statistical Area in north central Florida was selected and interviewed. For our analyses, the sample has been weighted to resemble by age-sex-race categories the 1980 population of the county in which the data were collected. All interviews were conducted in person, with an overall refusal rate of 20.0%. An analysis of the age-sex-race characteristics of the 2115 respondents and of the refusals indicated that no one group was disproportionately represented among the refusals. Approximately 16% of the sample were Black, and half were women. Forty-seven percent of the sample were age 18–29; 40% were age 30–59; and 13% were age 60 or older.

Measures

Smoking status. Responses to questions concerning lifetime abstinence, attempts and/or success at quitting, and current smoking formed the basis of the smoking cessation history measure. Current smokers were divided into two groups. Those who indicated that they had never attempted to quit smoking or reported that their longest attempt at quitting had lasted for one week or less were placed into the category of "never seriously attempted to quit." Those who indicated that they had ever tried to quit smoking for more than one week were placed into the category of "unsuccessful quitters." Individuals currently identifying themselves as nonsmokers and as having quit smoking in the past comprise the group of "successful quitters."

Other smoking history variables. Individuals who had ever smoked were also asked if there were any situations in which they particularly liked to smoke. Most (86%) answered "yes"; these individuals were asked what these situations were. Two dichotomous variables (yes/no response) were constructed to indicate whether individuals mentioned "with an alcoholic beverage" or in stressful situations as occasions when they enjoyed smoking. An additional variable, related to smoking cessation, was whether a doctor had ever said that they should quit (yes or no).2

1 The decision to exclude individuals from consideration as "serious quitters" if they reported quitting for one week or less was based on several factors, including field experience and research that have documented the significant overreporting of a variety of health or risk-reducing behaviors.

2 In order to validate the measures of attempts and success at smoking cessation, we can compare the proportions of individuals who report both in this study to proportions in other studies. The proportions of smokers who have attempted to quit (79%) and have been successful at it (44%) are only slightly higher than the 50–75% attempt rates
Alcohol consumption status. Responses to questions concerning volume, quantity and frequency of beer, wine, and liquor consumption, and lifetime and current abstention formed the basis of the quantity-frequency alcohol consumption status measure (Edwards, Hensman, & Peto, 1973). The measure has been judged to have adequate reliability and validity (Armor, Polich, & Stambul, 1976, Appendix A) and has been used in most major field surveys of alcohol consumption (cf. Johnson, Armor, Polich, & Stambul, 1977; Clark & Midanik, 1981). As in other studies, individuals were placed into one of four categories: lifetime abstainer, quitter (current abstainer, former user), light drinker (between .01 and .2 ounces of ethanol per day during the year previous to the interview) and moderate to heavy drinker (.22 ounces or more of ethanol per day).

Sociodemographic variables. A composite socioeconomic status index was composed of three variables — education, income, and occupation. Categories for education and income were assigned the average of the cumulative percentage of inhabitants of the county in the category and the cumulative percentage of the adult population up to the previous category. The 1970 occupational status codes (Nam & Powers, 1983) were used as scores to assess occupation. The three scores were then summed and averaged, with an alpha reliability coefficient of .73. The composite variable was then divided into three categories, such that the sample was divided into three groups of nearly equal size.

Age was divided into three categories for the purposes of this study: 18–29, 30–59, and 60+. Sex and race were each treated as dichotomous variables.

Analyses

The data were analyzed at three increasingly complex levels — univariate, bivariate, and multivariate. Univariate analyses include presentation of frequencies, percentages, and means, as appropriate, for the alcohol and smoking cessation variables. Bivariate analyses assessed the interrelationship between alcohol use and smoking cessation variables, using contingency table analytic techniques. For the multivariate analyses, two separate analyses were conducted. One determined multivariate predictors of attempts to quit smoking; the other determined multivariate predictors of success at quitting given an attempt. Only those individuals were included in the second analysis who had ever attempted to quit smoking.

Nine independent variables were entered into both multivariate logit analyses. Two dichotomous dummy variables were created to represent drinking history: those who had quit drinking versus all others, and current heavy drinking versus all other categories. One additional alcohol-related variable, reporting that one enjoys smoking with alcohol, was included. Two smoking behavior variables were also included: a doctor having said to quit smoking and enjoying smoking at stressful times. Four sociodemographic variables, all of which had been found in previous studies to be related to smoking behavior, were also included in the models tested. These included race (White vs. Black), gender, social class (trichotomized as presented earlier), and age (also trichotomized as discussed earlier). In addition, all (36) two-way interactions among predictor variables were allowed to be entered in the initial models.

For both sets of logit analyses, a stepwise procedure was used (Goodman, 1971). First, a multivariate logit model was estimated for each dependent variable with all main effects and

and the current 40% quit rate (UDHHS, 1986), providing one assessment of validity. Differences between these rates for this sample and those of other studies may be explained by the high educational level of inhabitants of the county sampled (see Note 4, below).

3An additional variable, amount smoked (either at present for current smokers or when the respondent smoked for quitters), was entered in both equations, since previous research had shown it to be related to smoking cessation efforts. However, it had no significant main effect on either smoking cessation dependent variable, and was deleted from the analyses.
Table 1. Descriptive results, smoking and alcohol history variables

<table>
<thead>
<tr>
<th>History of Substance Use</th>
<th>Smoking</th>
<th>Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifetime Abstainer</td>
<td>1097</td>
<td>247</td>
</tr>
<tr>
<td>Successful Quitter</td>
<td>446</td>
<td>227</td>
</tr>
<tr>
<td>Current User (total)</td>
<td>560</td>
<td>1585</td>
</tr>
<tr>
<td>Light</td>
<td>268</td>
<td>692</td>
</tr>
<tr>
<td>Moderate/Heavy</td>
<td>292</td>
<td>893</td>
</tr>
<tr>
<td>Of Current Smokers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never tried to quit</td>
<td>214</td>
<td>38</td>
</tr>
<tr>
<td>Tried unsuccessfully</td>
<td>343</td>
<td>62</td>
</tr>
<tr>
<td>Of Ever-Smokers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoy(ed) smoking with alcohol</td>
<td>391</td>
<td>39</td>
</tr>
<tr>
<td>Enjoy(ed) smoking in stressful situations</td>
<td>286</td>
<td>28</td>
</tr>
<tr>
<td>Doctor told to quit</td>
<td>349</td>
<td>35</td>
</tr>
</tbody>
</table>

all two-way interaction effects entered into the model. Each coefficient indicates the relationship of the independent to the dependent variable, controlling for the other independent variables in the equation. This produced Model 1 in each case, which included the main effects of all independent variables and all significant two-way interactions. Next, all nonsignificant predictor variables were dropped from the model, yielding Model 2. The overall models were assessed with the chi-square (likelihood ratio $G^2$) goodness-of-fit test. High (and significant) chi-square values indicate a significant departure of the model from the data, that is, a poor fit, while nonsignificant chi-square values indicate a good fit, that is, that the model fits the data well (Fienberg et al., 1980).

**RESULTS**

**Descriptive results**

Table 1 shows the proportions of individuals who were lifetime abstainers, quitters, and light and moderate-heavy users of tobacco and alcohol. Consistent with previously reported data, about four times as many individuals were lifetime nonsmokers as were lifetime abstainers of alcohol (52% vs. 12%). Similarly, nearly twice as many individuals had quit smoking as had quit drinking (21% vs. 11%). And, there were less than half as many current smokers (26%) as current drinkers (77%). These data indicate somewhat higher proportions of current alcohol users and slightly lower proportions of current smokers than in the nation as a whole. Nearly half of the total sample ($N = 1006$) had smoked at some time in their lives. Of these ever-smokers, 44% had successfully quit; 34% had tried seriously but not succeeded; and, 21% reported never having tried to quit for a week or longer. Of those who had ever smoked, 35% reported that a physician had ever advised them to quit. When asked

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*When the sample was weighted to resemble the race-sex-age categories of the United States, proportions of smokers and users of alcohol more closely resembled those of the country as a whole. However, there was still a lower incidence of smoking for the re-weighted sample than in the U.S., probably a reflection of the high mean education level of the county in which the data were collected and the low rates of smoking among college-educated youths in the U.S.*
in what situations they enjoyed smoking, 39% of those who had ever smoked mentioned "with alcoholic beverages" and 28% indicated enjoying smoking in stressful situations.

**Bivariate results**

Table 2 presents the crosstabulation of smoking cessation history with drinking history for individuals who had ever smoked. Along with Ns in each cell are column percents (proportion in each drinking history category falling into a given smoking history category) and standardized adjusted residuals, which are a function of expected versus observed frequencies in each cell. These coefficients are interpretable such that an absolute value of 2 or greater can be considered to be an unlikely result of chance, and probably indicates some sort of relationship between the respective categories of the two variables (SPSS, 1985). Those who had quit drinking were significantly more likely to have quit smoking successfully and less likely to have quit unsuccessfully than abstainers or either group of current drinkers. Current drinkers (particularly light drinkers) were found to be less likely to have quit smoking successfully and somewhat more likely to have tried to quit unsuccessfully than abstainers or individuals who had quit drinking.

In the bivariate analyses, hypothesis 1 was only partially supported; individuals who were heavy drinkers were not less likely to attempt or be successful at smoking cessation. Instead, current drinkers (especially light drinkers) were significantly less likely to have attempted to quit smoking and were much less successful at it than current nondrinkers or lifetime abstainers. Hypothesis 2 was clearly supported; individuals who had quit drinking were more likely to have quit smoking successfully given an attempt.

**Multivariate results**

*Predictors of attempts to quit. Alcohol use history.* Both alcohol use variables were significantly related to attempts to quit smoking. Controlling for the other variables in the analysis, individuals who had quit drinking were less likely to have tried quitting cigarettes than others. Those who were heavy drinkers were quite significantly less likely than others to have tried doing so, confirming Hypothesis 1. In addition, individuals who said they enjoyed smoking and alcohol concurrently were more likely to try to quit smoking than those who did not use the two concurrently.

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Table 2. Crosstabulation of smoking cessation and drinking histories

<table>
<thead>
<tr>
<th>Smoking Cessation History</th>
<th>Alcohol Use</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never Drunk</td>
<td>Quit Drinking</td>
<td>Light Drinker</td>
<td>Moderate/Heavy Drinker</td>
<td>Total</td>
</tr>
<tr>
<td>Never Tried Seriously</td>
<td>12</td>
<td>26</td>
<td>58</td>
<td>114</td>
<td>210</td>
</tr>
<tr>
<td></td>
<td>25.4</td>
<td>17.7</td>
<td>20.8</td>
<td>22.3</td>
<td>21.3</td>
</tr>
<tr>
<td></td>
<td>+0.7</td>
<td>-1.1</td>
<td>-0.3</td>
<td>+0.8</td>
<td>-</td>
</tr>
<tr>
<td>Tried Unsuccessfully</td>
<td>14</td>
<td>32</td>
<td>112</td>
<td>181</td>
<td>340</td>
</tr>
<tr>
<td></td>
<td>29.8</td>
<td>21.8</td>
<td>40.0</td>
<td>35.5</td>
<td>34.5</td>
</tr>
<tr>
<td></td>
<td>-0.7</td>
<td>-3.5</td>
<td>+2.3</td>
<td>+0.7</td>
<td>-</td>
</tr>
<tr>
<td>Successfully Quit</td>
<td>22</td>
<td>89</td>
<td>110</td>
<td>216</td>
<td>437</td>
</tr>
<tr>
<td></td>
<td>44.7</td>
<td>60.4</td>
<td>39.2</td>
<td>42.3</td>
<td>44.2</td>
</tr>
<tr>
<td></td>
<td>+0.1</td>
<td>+4.3</td>
<td>-2.0</td>
<td>-1.3</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>147</td>
<td>281</td>
<td>511</td>
<td>987</td>
</tr>
</tbody>
</table>

Cell entries are N, column %, adjusted standardized residuals.
Table 3. Multivariate Logit Analyses of Smoking Cessation Behavior

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Attempts to Quit</th>
<th>Success at Quitting, Given an Attempt</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Quit drinking</td>
<td>-.15*</td>
<td>-.12*</td>
</tr>
<tr>
<td>Heavy drinking</td>
<td>-.24***</td>
<td>-.24***</td>
</tr>
<tr>
<td>Enjoy smoking with drinking</td>
<td>.14***</td>
<td>.14***</td>
</tr>
<tr>
<td>Enjoy smoking at stressful times</td>
<td>-.30***</td>
<td>-.32***</td>
</tr>
<tr>
<td>Doctor said to quit</td>
<td>-.08*</td>
<td>—</td>
</tr>
<tr>
<td>Race (1 = W, 2 = B)</td>
<td>-.62***</td>
<td>-.61***</td>
</tr>
<tr>
<td>Gender (1 = M, 2 = F)</td>
<td>-.10*</td>
<td>-.10*</td>
</tr>
<tr>
<td>SES (1 = Low, 3 = High)</td>
<td>-.15*</td>
<td>-.15***</td>
</tr>
<tr>
<td>Age (1 = 18–29, 2 = 30–60+)</td>
<td>.10</td>
<td>—</td>
</tr>
<tr>
<td>Quit drinking × Enjoy smoking with drinking</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Heavy drinking × Race</td>
<td>.15**</td>
<td>.14***</td>
</tr>
<tr>
<td>Social class × Race</td>
<td>-.25***</td>
<td>-.27***</td>
</tr>
<tr>
<td>Enjoy at stressful times × Race</td>
<td>-.18***</td>
<td>-.18**</td>
</tr>
<tr>
<td>Enjoy at stressful times × Quit drinking</td>
<td>-.14*</td>
<td>-.13*</td>
</tr>
<tr>
<td>df</td>
<td>351</td>
<td>100</td>
</tr>
<tr>
<td>Likelihood-Ratio $\chi^2$</td>
<td>457.54***</td>
<td>185.72***</td>
</tr>
</tbody>
</table>

Note. Unless otherwise noted, independent variables were coded so that "1" indicates membership in listed category, "0" indicates nonmembership. Dependent variables were coded so that "1" indicates attempted to quit or succeeded at quitting, respectively, and "0" indicates no attempt to quit or failure at quitting, respectively.

*.01 ≤ p < .05. ** .001 ≤ p < .01. *** p < .001.

Smoking variables. Enjoying smoking at times of stress apparently was a barrier to attempts to quit, controlling for the other variables, given the strong and significant negative relationship between the two. This confirms Hypothesis 4. A doctor suggesting that one should quit was not related to making an attempt to quit.

Sociodemographic variables. Race, gender, and social class were related to attempts to quit smoking, while age was not significantly related. Whites, males, and lower SES individuals were more likely to attempt to quit, controlling for other variables.

Interaction terms. Four interaction terms were significantly related to attempts to quit smoking in the final model. That is, these terms contributed significantly to the prediction of attempts to quit, even after the corresponding significant main effects had been entered into the equation. The heavy drinking × race interaction was significant because heavy drinkers who were Black were much less likely than other Blacks to try quitting smoking; there was no relationship among whites, however, between heavy drinking and attempts to quit smoking. The social class × race interaction was significant because high socioeconomic status was related to attempts at quitting for Whites, but not for Blacks. Enjoying smoking at stressful times interacted in significant ways with race and quitting drinking to predict attempts to quit. Blacks (but not whites) were more likely to try quitting if they didn't enjoy smoking in stressful situations. Individuals who quit drinking were more likely to attempt to quit smoking if they didn't enjoy smoking with stress.

Model fit. The likelihood-ratio $\chi^2$ was highly significant (all ps < .001) for both models. This indicates a poor fit of the models to the data. That is, additional variables and/or three-, four-, and higher-way interaction terms would be required to provide a good fit.
**Predictors of success at quitting.** The predictors of success at quitting, given an attempt, were quite different from those of attempts to quit. Of seven significant main effects for attempts, only three were significant and in the same direction for success. Of six significant main effects for success, only three were significant and in the same direction for attempts.

**Alcohol use history.** Individuals who were heavy drinkers were less likely to quit smoking successfully, controlling for other variables. In addition, individuals who had quit drinking were more successful at quitting smoking than those who had not quit drinking. These results confirm hypotheses 1 and 2. And, individuals who said they enjoyed smoking concurrently with alcohol were more likely to quit successfully. This finding supports Hypothesis 3.

**Smoking variables.** Enjoying smoking during stressful times was not related to success at quitting smoking; thus the second half of hypothesis 4 was not confirmed. A doctor having suggested that one quit was, however, negatively related to success at quitting smoking. Individuals who had been told by a doctor to quit were less likely to have been successful at quitting than individuals who had not received such advice.

**Sociodemographic variables.** Sociodemographic variables were also significant predictors of success at smoking cessation. Whites were more likely than Blacks to successfully quit smoking. Older individuals were more likely than younger individuals to have been successful. Gender and socioeconomic status were not significant predictors of success, controlling for other factors.

**Interaction terms.** Two interaction terms were significant in the final model. The relationship between enjoying smoking concurrently with drinking and success at quitting smoking quite naturally held only for those who had not yet quit drinking. And, heavy drinking was a barrier at quitting smoking for Blacks, but not for Whites.

**Model fit.** Model 1 included all main effects and all significant interaction terms. It exhibited a relatively poor fit, as indicated by a likelihood-ratio $G^2$ of 404.85 ($p < .001$). In the final model, Model 2, only significant main effects and interaction effects were included. This model fit the data well, with a $G^2$ of 66.31, ($p > .05$).

**Discussion**

History of alcohol use was found to be strongly related to attempts and success at smoking cessation. Heavy drinkers were less likely to attempt to quit smoking and, if they did attempt to do so, were less likely than others to succeed, controlling for other variables. Thus, both parts of Hypothesis 1 were confirmed. Having quit drinking was very strongly related to success at smoking cessation given an attempt (confirming Hypothesis 2), and slightly negatively related to attempts to quit smoking, when controlling for the other variables in the models. Individuals who enjoyed smoking with alcohol (presumably social smokers) were somewhat more likely to attempt to quit smoking and to be successful at it than those who did not enjoy smoking and drinking concurrently (confirming Hypothesis 3). Those who enjoyed smoking at stressful times were less likely to make a serious attempt at quitting, but no less likely to be successful at it, confirming one but not both parts of Hypothesis 4. In addition, quitting drinking, heavy drinking, and enjoying smoking at stressful times or with alcohol interacted with race or with one another in predicting attempts or success at smoking cessation.

The concordance of heavy drinking and never having attempted to quit smoking is consistent with previous research. The association of concurrent smoking and alcohol use with attempts and success at quitting suggests that alcohol alone may be able to substitute for the combination of alcohol and smoking in meeting the needs of individuals in social situations, confirming Hypothesis 2. Indeed, among drinkers, those who have enjoyed smoking concurrently with alcohol drink significantly more alcohol. In addition, individuals
who smoke with alcohol may be "social" smokers, and may be less physiologically and/or psychologically addicted to cigarettes. Consistent with this suggestion is the finding that those who smoke in conjunction with alcohol are also less likely to smoke "first thing in the morning," with only 14% of those smoking and drinking concurrently having done so, while 26% of those who do not smoke with alcohol do so. A more precise taxonomy of social situations in which only one of alcohol and smoking or both are enjoyed would be the first step in understanding their relationship as they relate to social situations.

Interestingly, smoking in stressful situations was more problematic in the beginning of the cessation process than in the process of succeeding at cessation. Somewhat more individuals who enjoyed smoking in stressful situations (25%) than those who did not (19%) had tried to stop smoking for one week or less. Perhaps (though it remains here an empirical question) it is because situations perceived as stressful arose early on during the cessation attempt or as individuals were deciding whether or not to attempt to quit. Analysis of both daily hassles and stressful events during the period in which individuals consider quitting is necessary in order to more fully understand the relationship among stress, alcohol use, and smoking cessation.

The weak but significant association of quitting drinking with never having attempted to quit smoking, after controlling for the other variables, may be related to the use of cigarettes to fulfill the needs that were once met by a combination of alcohol and smoking. Another counter-intuitive finding was that individuals whose physician had suggested that they quit smoking were less successful at quitting, given an attempt. This result may be a consequence of the nature of retrospective data and individuals' tendency to believe in their own self-efficacy. That is, individuals who may have succeeded at quitting may be less likely than those who have failed to remember that a doctor suggested they quit and more likely to give themselves a larger share of credit for quitting. Other research (Hanks & Antonuccio, 1987) has also found that individuals who are internally motivated (rather than motivated by external forces) increase their smoking after a physician's suggestion to quit.

Among the six significant interaction effects, four involved race. Heavy drinkers who were Black (but not those who were White) were less likely to try quitting smoking than those who were not heavy drinkers. This may be explained at least in part by the greater differential between Blacks and Whites in number of cigarettes smoked for heavy than light or nondrinkers. Among heavy drinkers who smoked, 37% of Whites and 20% of Blacks (just slightly more than 1/2 the proportion) smoked one pack or more per day. Among light drinkers or nondrinkers, 28% of Whites but only 7% of Blacks (only 1/4 the proportion) smoked more than one pack a day. Some constellation of cultural beliefs and/or behaviors among Blacks who are not heavy drinkers may predispose them to smoke less if they do smoke, and to find it easier than heavy drinkers to attempt and/or to be successful at quitting smoking. The greater likelihood of high SES whites (but not Blacks) to attempt to quit may have been due simply to the greater variation in SES among whites than Blacks. The final interaction effect involving race was that Blacks (but not Whites) who enjoyed smoking with stress were less likely to attempt to quit smoking. Two related findings help interpret this interaction. First, of those who enjoyed smoking with stress and who considered quitting, 54% of Blacks (and only 21% of Whites) attempted to quit smoking for one week or less, which isn't even counted as having made an attempt in this study. Also, among Blacks who had quit smoking, those who enjoyed smoking with stress smoked more cigarettes before quitting. So, perhaps stressful situations led Blacks more than Whites to decide early in the decision-making process not to seriously attempt to quit; also, smoking greater quantities of cigarettes may have led to greater difficulty in beginning the cessation process.

With regard to intervention, the results of this study suggest that individuals' alcohol use history should be assessed when they are contemplating an attempt at smoking cessation.
Joint alcohol/tobacco use and either current heavy drinking or having stopped drinking alcohol should be factors considered in developing an intervention plan. Those who have quit drinking should be encouraged to use what they learned from that process to assist them in quitting smoking. Those who are heavy drinkers as well as those who enjoy smoking with drinking or to cope with stress should be made aware of the potential importance of these variables for the success of their smoking cessation efforts.

Further research is required in order to better understand: (a) the relationship of alcohol and smoking situationally, and under stressful conditions; (b) the variables that may have led to both successful quitting of alcohol use and smoking cessation; (c) potential personality, situational, psychological, and/or physiological variables that seem to make it difficult for heavy drinkers to quit smoking; (d) the chronological and conceptual relationship of the processes of quitting alcohol and smoking; (e) the joint influence of physiological and psychological dependence and social variables on the relationships between alcohol use and attempts and success at smoking cessation; and (f) the extent to which these findings, largely concerning self-initiated smoking cessation attempts, can be applied to controlled smoking interventions.

REFERENCES


