Spousal and Alcohol-Related Predictors of Smoking Cessation: A Longitudinal Study in a Community Sample of Married Couples

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We investigated the longitudinal influence of spousal and individual heavy drinking and heavy smoking on smoking cessation among married couples. Couples' (N=634) past-year smoking, alcohol problems, and heavy drinking were assessed. We used an event history analysis and found that spousal and one's own heavy smoking and one's own heavy drinking decreased the likelihood of smoking cessation. Heavy drinking and spousal behavior should be considered when developing public health interventions and policies for smoking cessation. (*Am J Public Health.* 2009;99:231–233. doi: 10.2105/AJPH.2008.140459)

Spouses play a significant role in shaping each other's health behaviors,[1] including tobacco use and alcohol consumption.[2,3] Previous published findings from a longitudinal community sample of married couples indicated that nonsmoking wives who had previously been smokers were more likely to resume smoking if their husbands smoked.[3] Smokers are more likely to achieve cessation if their partners are nonsmokers.[4] However, these studies often fail to examine simultaneously other factors related to changes in smoking, and many spousal studies use information from only 1 member of the couple.

Researchers also have found a longitudinal influence of partners on each other's drinking.[5,6] In a prospective study of partner influence and alcohol use, husbands' premarital drinking predicted wives' drinking during the first year of marriage, and wives' drinking in the first year of marriage predicted husbands' drinking in the second year of marriage.[7] Taken together, significant evidence suggests that couples' health behaviors affect each partner in complex ways. To date, researchers have not integrated individual and partner risk factors as they relate to smoking cessation.

At the individual level, tobacco use and alcohol consumption are highly correlated, and alcohol consumption is a known risk factor for smoking cessation failure, especially among heavy drinkers.[8] Researchers have proposed a cue reactivity model of polysubstance use,[9,10] in which individual smoking cues elicit urges to drink and alcohol cues elicit urges to smoke. However, this model has not been extended to consider an intimate partner specifically. Given the significant influence intimate partners have on each other's behaviors, it is important to determine whether the drinking patterns of 1 spouse serve as cues to influence the tobacco use by the other, thereby hindering cessation.

Our study uniquely addressed how married partners influence each other's behaviors. Unlike other studies of couples that rely on partner reports, we independently assessed both husbands' and wives' behaviors over time. Participants enrolled at the beginning of their marriage, allowing assessment of life transitions. Our purpose was to investigate the longitudinal influence of spousal and individual heavy drinking, alcohol problems, and heavy smoking on smoking cessation within the first 7 years of marriage.

METHODS

Participants

Participants were involved in a longitudinal study of marriage and alcohol use. All were at least 18 years old, spoke English, and were literate. Couples were ineligible if either spouse had been in a previous marriage. Our analyses were based on 634 couples. At the initial assessment, the average age of the men was 28.7 (SD=6.3) years, and the average age of the women was 26.8 (SD=5.8) years. The majority of the men and women in the sample were European American (husbands: 59%; wives: 62%). About one third of the sample was African American (husbands: 33%; wives: 31%). The sample had small percentages (fewer than 5%) of Hispanic, Asian, and American Indian participants. A large proportion of husbands and wives had at least some college education (husbands: 64%; wives: 69%), and most were employed at least part time (husbands: 89%; wives: 75%). Consistent with other studies of newly married couples,[11–13] many couples were parents at the time of marriage (38% of the husbands and 43% of the wives) and were living together before marriage (70%).

Procedures

After applying for a marriage license, couples were recruited for a brief interview that assessed demographics, family and relationship factors, and substance use. Fewer than 8% of the individuals approached declined to participate in the brief recruitment interview. We interviewed 970 eligible couples. Complete details of the recruitment process can be found elsewhere,[14,15] but briefly, couples who agreed to participate in the longitudinal study were given identical questionnaires to complete at home and asked to return them in separate postage-paid envelopes. Participants were asked not to discuss their responses with their partners. Each spouse received $40 for his or her participation.

Only 7% of the eligible couples refused to participate in the longitudinal study. Those who agreed to participate, compared with those who did not, were more likely to have lower incomes ($P<.01$), and the women were more likely to have children ($P<.01$). No other differences were identified. Of the 887 eligible couples who agreed to participate (13 of the original 900 did not marry), data were collected from both spouses for 634 couples (71.5%). The 634 couples were the basis for this study.

Couples who returned the questionnaires were more likely to be living together compared with couples who did not return the questionnaires (70% vs 62%; $P<.05$) and more likely to be European American. No other sociodemographic differences existed between the couples who responded and those who did not. Average past-year alcohol consumption did not differ between couples who returned the questionnaires and those who did not. Husbands in nonrespondent couples consumed 6 or more drinks or were

intoxicated in the past year more often than were husbands who completed the questionnaire; however, these differences were small.

On the couples' first, second, fourth, and seventh wedding anniversaries (waves 2, 3, 4, and 5, respectively), we mailed them questionnaires similar to those they received at the first assessments. Couples were asked to complete the questionnaires and return them in the postage-paid envelopes. Each spouse received $40 for his or her participation in assessments 2 and 3 and $50 for assessments 4 and 5. At the fifth assessment, 79.7% (n=505) of the women completed the questionnaire. Wives who did not complete the questionnaires at the fifth assessment did not differ from other wives on wave 1 frequency of heavy drinking or smoking. Among husbands, 68.1% (n=432) completed the questionnaires at the fifth assessment. Husbands who did not participate in the fifth assessment did not differ from other husbands on wave 1 frequency of heavy drinking or smoking.

Measures and Analysis

At each wave, couples' past-year smoking (yes or no, cigarettes per day), frequency of past-year alcohol problems (25-item self-report measure), and frequency of heavy drinking were assessed. Consistent with our previous work,[14] heavy drinking was measured by the maximum score of two 9-item scales that assessed past-year frequency of drinking 6 or more drinks on an occasion and frequency of drinking to intoxication. An event history analysis (also known as Cox regression) was used to predict time to smoking cessation. These longitudinal models examine how time-varying and time-invariant predictors are associated with changes in the likelihood of an event occurring[16] (in this study, smoking cessation). In our study, age and race/ethnicity were modeled as time-invariant, baseline variables, and all other variables were modeled as time-varying predictors.

RESULTS

African American men were less likely than European American men to quit smoking. Race/ethnicity was not related to smoking cessation among women, and age was not related to smoking cessation for men or women (Tables 1 and 2). After we controlled for age and race/ethnicity, husbands and wives were both more likely to quit smoking if their spouse was a nonsmoker. Husbands and wives who smoked fewer cigarettes per day also were more likely to quit smoking. Husbands with more-frequent episodes of heavy drinking, compared with those who did not drink heavily in the past year, were less likely to stop smoking. For instance, husbands who drank heavily several times a week were almost half as likely to stop smoking as were those who did not engage in heavy drinking (hazard ratio=0.41; Table 1). A similar trend emerged for women; more-frequent heavy drinking was associated with decreased likelihood of smoking cessation. The partner's heavy drinking was not related to smoking cessation.

TABLE 1—Spousal and Alcohol-Related Predictors of Smoking Cessation Among Husbands

	Hazard Ratio (95% CI)	SE
Husband's age[a]	1.0 (0.9, 1.1)	0.02
Husband's race/ethnicity (European American compared with African American)[a]	2.4** (1.3, 4.5)	0.77
Wife nonsmoker[b]	4.4*** (2.5, 10.0)	0.07
Husband's heavy drinking<1 time/mo (compared with no heavy drinking)[b]	0.8 (0.4, 1.5)	0.26
Husband's heavy drinking several times a month–weekly (compared with no heavy drinking)[b]	0.4* (0.2, 0.9)	0.16
Husband's heavy drinking>1 time/wk (compared with no heavy drinking)[b]	0.2* (0.1, 0.8)	0.14
Husband smoked fewer cigarettes[b]	1.3** (1.1, 1.7)	0.06
Wife's heavy drinking[b]	1.1 (0.9, 1.4)	0.11
Husband's alcohol problems[b]	1.0 (0.9, 1.0)	0.02

Note. CI=confidence interval. Recruitment occurred from 1996 to 1999 in Buffalo, NY. Data collection has continued through the seventh wedding anniversaries. Hazard ratios greater than 1.0 are associated with an increased likelihood of smoking cessation, whereas hazard ratios less than 1.0 are associated with a decreased likelihood of smoking cessation. Hazard ratios at 1.0 indicate no significant association.
[a]These variables (age and race) were modeled as baseline, time-invariant predictors.
[b]These variables were modeled as time-varying covariates.
*P<.05; **P<.01; ***P<.001.

DISCUSSION

These findings show complex relations between spousal and individual substance use

TABLE 2—Spousal and Alcohol-Related Predictors of Smoking Cessation Among Wives

	Hazard Ratio (95% CI)	SE
Husband's age[a]	1.0 (0.9, 1.0)	0.02
Husband's race/ethnicity (European American compared with African American)[a]	1.6 (0.8, 3.1)	0.53
Wife nonsmoker[b]	3.5*** (2.0, 5.0)	0.09
Husband's heavy drinking<1 time/mo (compared with no heavy drinking)[b]	0.9 (0.5, 1.6)	0.27
Husband's heavy drinking several times a month–weekly (compared with no heavy drinking)[b]	0.4 (0.2, 1.1)	0.20
Husband's heavy drinking>1 time/wk (compared with no heavy drinking)[b]	1.3** (1.1, 1.7)	0.07
Husband smoked fewer cigarettes[b]	1.1 (0.9, 1.2)	0.09
Wife's heavy drinking[b]	1.0 (1.0, 1.1)	0.22

Note. CI=confidence interval. Recruitment occurred from 1996 to 1999 in Buffalo, NY. Data collection has continued through the seventh wedding anniversaries. Hazard ratios greater than 1.0 are associated with an increased likelihood of smoking cessation, whereas hazard ratios less than 1.0 are associated with a decreased likelihood of smoking cessation. Hazard ratios at 1.0 indicate no significant association.
[a]These variables (age and race) were modeled as baseline, time-invariant predictors.
[b]These variables were modeled as time-varying covariates.
*P<.05; **P<.01; ***P<.001.

patterns and smoking cessation. Consistent with previous findings,[3,4] spousal and one's own heavy smoking decreased the likelihood of smoking cessation. Husbands and wives were both more likely to quit smoking if their spouse was a nonsmoker. Many factors that increase the likelihood of smoking cessation (e.g., implementation of a home smoking ban)[17] need involvement of family members to be successful. Furthermore, familial cooperative behaviors (e.g., talking the smoker out of smoking) are associated with successful quitting.[18] Smoking cessation programs might improve quit rates by targeting the systemic influence of spousal behavior.[18,19]

Contrary to our expectations, partners' heavy drinking did not serve as cues to reinforce smoking, thus reducing the likelihood of cessation. Perhaps the strength of the relation between one's own drinking and one's own smoking, especially among heavy drinkers, minimizes the spousal influence of drinking. Individually, men and women with frequent episodes of heavy drinking, compared with those with few or no heavy drinking episodes, were less likely to quit smoking. Heavy drinking was operationalized as frequency of heavy drinking, not simply any heavy drinking. Greater frequency of heavy drinking was related to less likelihood of smoking cessation. This finding provides additional evidence that frequent heavy drinking hinders smoking cessation.

In our study, drinking and smoking variables were based on self-report. Other limitations included attrition of couples across time and the focus on frequency of heavy drinking. Despite these limitations, we provide evidence that spousal and one's own heavy smoking and one's own heavy drinking decrease the likelihood of smoking cessation. Public health interventions and policies for smoking cessation should consider the frequency of heavy drinking and the influence of spousal behavior. ■

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Contributors

All authors participated in the conceptualization of the study. K.M. Dollar led the writing of the brief. G.G. Homish completed the analyses and wrote sections of the brief. L.T. Kozlowski and K.E. Leonard supervised, reviewed, and edited drafts of the brief.

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Human Participant Protection

This study was approved by The State University of New York at Buffalo's institutional review board.

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