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Spousal Influence on Smoking Behaviors in a US Community Sample of Newly Married Couples

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Abstract

Among married couples, partners often have similar characteristics and behaviors. Among individuals who smoke cigarettes, it is not uncommon for them to have a partner who also smokes. In fact, having a partner who smokes can influence the spouse's initiation of smoking, or return to smoking after a previous quit attempt. Additionally, it is possible that a nonsmoking partner can influence his/her spouse to stop smoking. Participants for this research are from a community sample of couples in the United States. They were recruited at the time they applied for their marriage license and followed through to their second wedding anniversary. Logistic regression models, controlling for demographics, were utilized to determine if a partner's smoking status predicted smoking initiation or relapse over the early years of marriage. Overall, there was some support that a partner's smoking status did influence the other's smoking, although more support was found for spousal influence on relapse than cessation. There was more support for husband's influence compared to wife's influence, nonsmoking wives were more likely to resume smoking in the early years of their marriage if their partners were smokers. Wive's smoking, however, did not predict husband initiation of smoking. These findings suggest that during the transition into marriage, spouses do influence their partners' behaviors. In particular, women are more likely to resume smoking, or return to smoking if their partners smoke.

Keywords

smoking; marriage; spousal influence; USA

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Romantic partners are often quite similar to one another and this similarity may include a wide variety of health and behavioral characteristics. This similarity has been found for affective disorders (Galbaud du Fort, Bland, Newman, & Boothroyd, 1998) and antisocial behavior (Krueger, Moffitt, Caspi, Bleske, & Silva, 1998). Yamaguchi and Kandel (1993) found significant concordance for drug use in couples both prior to and during their marriage. Similarly, Leonard and Das Eiden (1999) found significant correlations among men and women for the average daily volume of alcohol consumed, frequency of heavy drinking, and frequency of intoxication in the year prior to their marriage, as well as in the first year of marriage.

Spousal similarity for substance use is not restricted to alcohol and illicit drugs. If one person smokes cigarettes in a relationship, it is not uncommon for the partner to also be a smoker (Sutton, 1993). In a study of smoking cessation, just over a third of the sample reported that their partners also smoked (Roski, Schmid, & Lando, 1996). Because this sample consisted of more educated individuals who volunteered for a smoking cessation program, it is possible that this is an underestimate of the rate of smoking behaviors of both partners in the general population or in more at-risk populations. In a sample of low-income, pregnant women, three-quarters of the women reported that their husband or partner also smoked (Kendrick et al., 1995).

There are several reasons why romantic partners may have similar behavioral patterns. Assortative mating is one possible explanation for spousal similarity. This non-random mating between individuals would result in individuals choosing partners who are already similar to themselves in terms of personality characteristics, behaviors, physical traits, or even health. In a study of similarity among newlyweds (Houts, Robins, & Huston, 1996), couples were found to be more similar on role preferences and leisure activities than one would expect by chance, thus providing some evidence for assortative mating. Sutton (1993) found that across a wide range of characteristics (e.g., age, education, religion, personality, etc) "...similarities between partners are already present at the outset [of marriage]" (page 28). Taken together, these findings suggest that, for some characteristics, assortative mating may explain spousal similarities.

Although individuals enter into marriage with partners who are similar to themselves; it is also possible that similarity arises by partners changing in response to the other's behaviors. For instance, one spouse may influence the other to adopt healthier behaviors (Umberson, 1987, 1992), thus causing a similarity in healthy behaviors that may not have existed prior to marriage. Spousal influence has also been identified as increasing similarity in other areas. Jennings and Stoker (2000) examined similarity of political beliefs and spousal influence in married individuals and found that spousal influence was involved in increasing political similarity in couples.

There is evidence to suggest that nonsmokers may be influenced to start smoking by their partners. Daly and colleagues (1993) examined late onset smoking initiation (smoking initiated at 17 years old or older) and found that women whose significant others smoked were significantly more likely to start smoking compared to women whose partners did not smoke. Additionally, a partner's smoking status may be the factor that influences the spouse's return to smoking. For instance, among women who quit smoking during pregnancy, the strongest predictor of relapse was having a partner who smoked (Severson, Andrews, Lichtenstein, Wall, & Zoref, 1995). Similarly, Kahn and colleagues (2002) found relapse rates 4 times as high for individuals living with smokers, compared to those who did not. When considering changes in smoking behaviors, Collins and colleagues (1990) found that social influence processes were the most important predictor of long term smoking outcome.

A spouse's smoking status may also affect a partner's cessation of smoking. Individuals are more likely to stop smoking if their partners are nonsmokers (McBride et al., 1998) and they are more likely to believe that they can remain a nonsmoker if their partner is a nonsmoker (Severson et al., 1995). Additionally, not only is current partner smoking status important, but past smoking may also influence a person's likelihood of quitting. Monden and colleagues (2003) found that individuals living with a current smoker, compared to those living with someone who never smoked or an ex-smoker, were the least likely to quit smoking.

There are several limitations in the current literature on factors related to smoking. Many of the studies that assess factors related to cessation and relapse of smoking among married couples have tended to focus on pregnant or postpartum women (e.g. McBride et al., 1998; Pollak & Mullen, 1997; Severson et al., 1995; Woodby, Windsor, Snyder, Kohler, & Diclemente, 1999), or enrolled participants who have volunteered for intensive smoking cessations programs (e.g. Mermelstein, Cohen, Lichtenstein, Baer, & Kamarck, 1986; Roski et al., 1996). The specific nature of these samples places some limitations upon the generalizability of the findings. For example, expectant mothers are likely to have an increased motivation to quit, but that motivation may be primarily limited to the period of pregnancy, evidenced by the high quit rates during pregnancy and rapid relapse shortly after the birth of the child. Few studies have considered smoking behaviors among the general population (West, McEwen, Bolling, & Owen, 2001). Additionally, although there is some research on how spouses influence their partners' alcohol use (e.g., Leonard & Mudar, 2003) research on spousal influence and smoking is lacking.

The transition into marriage provides a unique opportunity to examine change in individuals. Marriage has often been described as one transition in the family life cycle (For a discussion, see: Teachman, Polonko, & Scanzoni, 1987). As such, many changes occur during this transition. For instance, during this time, individuals continue the process of separation from their family-of-origin and form a new partnership (Wallerstein, 1994). Additionally, the individuals increase their interdependence on one another; that is, one person has an influence on the other (Huston & Robins, 1982). Social network changes are also likely during this transition with some premarital relationships weakening (Reid & Fine, 1992) while other relationships are developed (Cohen, 1992). Further, because couples tend to become less close over time and relationship satisfaction tends to decline (Glenn, 1998), we would expect spousal influence to be strongest at the time of marriage. Additionally, substance use patterns may also be affected (Labouvie, 1996). Alcohol use often declines prior to marriage and continues to decline over the transition into marriage for men and women (Miller-Tutzauer, Leonard, & Windle, 1991). Similarly, Bachman and colleagues (1997) found that marriage and even the anticipation of marriage resulted in a modest reduction of cigarette smokers in both men and women. Married individuals were slightly less likely to have started daily smoking and slightly more likely to have stopped (Bachman, O'Malley, Johnston, Rodgers, & Schulenberg, 1992). Bjornson and colleagues (1995) found that rates of smoking cessation are higher among married men and women compared to non-married individuals.

The purpose of this study was to examine smoking behaviors among individuals during the transition into marriage. Because of the decline in smoking that has been observed over the transition to marriage (Bachman, et. al, 1997), we hypothesized that nonsmoking husbands and wives would influence their partners' cessation of tobacco use during the early years of marriage. We also hypothesized ex-smokers, when presented with a context supportive of smoking, that is a partner who smokes, would be more likely to resume smoking than ex-smokers who married a non smoker. Husbands' influence on their wives was considered separately from wives' influence on their husbands.

Methods

Participants

Participants were involved in the Adult Development Study (ADS), a longitudinal study of the early years of marriage. The overall purpose of the ADS was to examine the interrelationships between alcohol use and marital functioning over the early years of marriage. All participants were recruited at the time of marriage. Inclusion criteria were that participants had to be at least 18 years old, spoke English, and were literate. Couples were ineligible for the study if either member had been previously married. Based on participants who provided data on their smoking status at Waves 1 and 2 (N= 537, 85% of the participants present at Wave 1), the average age of the men [mean (SD)] was 28.8 (6.2) years and the average of the women was 26.8 (5.7) years. The majority of the men and women in the sample were European American (husbands: 62%; wives: 64%). About one-third of the sample was African American (husbands: 31%; wives: 29%). There were very small percentages of Hispanic, Asian, and American Indian participants. A large proportion of husbands and wives had at least some college education (husbands: 65%; wives: 72%) and most were employed at least part-time (husbands: 90%; wives 76%). At the time of marriage, 36% of the husbands and 40% of the wives were parents. About 67% of the couples were living together prior to marriage, with the cohabiters living together an average of 21 months (SD: 34.3).

Procedures

After applying for a marriage license, couples were recruited for a 5-10 minute paid ($10) interview. The interview covered demographic factors (e.g. race, education, age), family and relationship factors (e.g. number of children, length of engagement), and substance use questions (e.g. current or past smoker, amount smoked, average alcohol consumption, times intoxicated in the past year). For interested individuals who did not have time to complete this interview, a telephone interview was conducted later that day or the next day (N = 62). Less than 8% of individuals approached declined to participate. We interviewed 970 eligible couples.

Complete details of the recruitment process can be found elsewhere (Leonard & Mudar, 2000; Leonard & Mudar, 2003), but briefly, couples who agreed to participate were given identical questionnaires to complete at home and asked to return in separate postage paid envelopes (Wave 1 Assessment). Participants were asked not to discuss their responses with their partners. Each spouse received $40 for their participation. Only 7% of eligible couples refused to participate. Those who agreed to participate, compared to those who did not, were more likely to have lower incomes ($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 (71.4%). Couples who returned the questionnaires were more likely to be living together compared to 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 compared to those who did not.

At the couples' first and second anniversaries (Waves 2 and 3), they were mailed questionnaires similar to those they received at the first assessments. As with the first assessment, they were asked to complete the forms and return them in the postage paid envelopes. Couple participation was high across the three assessments (74.5%). For the second and third assessments, data were collected from one or both members of 93% of couples (N = 590). Wives who did not participate in the second and third assessments were slightly younger ($p < .05$) and somewhat less educated than other wives ($p <.05$). Husbands who did not participate were less likely to be European American compared to the other husbands. There were no differences in the amount of smoking

for either husbands or wives who did not participate in the second and third assessments compared to those who did participate.

Measures

Tobacco Use.—At each assessment, each spouse was asked to report whether he or she currently smokes cigarettes. For those who responded that they did currently smoke, the number of cigarettes smoked per day was assessed. The daily number of cigarettes smoked was recorded on an 8 point scale from "just a few" to "2 or more packs per day." Participants who reported that they did not currently smoke were asked to report if they ever smoked. Individuals were considered to have relapsed if they reported current smoking and reported that they were nonsmokers at the previous wave. For this report, no distinction is made between a person who initiated smoking for the first time during the assessment and individuals who had previously quit smoking and then returned to smoking. The number of true initiators in our sample was quite low (less than 3 individuals at any time point). Individuals were considered to have stopped smoking if they reported smoking at the previous wave but did not report current smoking.

Demographic Factors.—At the initial in-person interview, each spouse reported their age, race/ethnicity, highest level of education obtained, employment status, number of children, and the number of months cohabitating.

Analyses

Descriptive statistics were utilized to characterize the couples. Similarity of smoking behaviors among couples was examined with Chi-square analyses. To compare similarity of smoking status across all waves, the sample was based on couples for whom information on their smoking status was available for all waves (N = 468). We compared the sociodemographic characteristics of this subsample with the full sample of 970 and found no differences for husbands or wives on any of the sociodemographic variables. Partner's influence was first assessed in bivariate models using logistic regression testing the relation between partner's smoking status and the spouse's return to smoking (no/yes) or cessation (no/yes). Multivariate models were used to control for any influence from demographic factors. In particular, stepwise logistic regression models were used to assess the influence of one partner's smoking behavior on his/her partner's relapse or cessation of smoking. In total, four logistic models were considered for a husband's influence on his wife and four models were considered for a wife's influence on her husband (relapse of smoking at Wave 2, relapse of smoking at Wave 3, cessation of smoking at Wave 2, cessation of smoking at Wave 3). For the relapse models, partner's smoking status was entered first followed by the demographic variables. The demographic variables were entered as a second block to determine if their inclusion eliminated the effect of the spouse's smoking. The samples for the logistic models of smoking relapse were based on individuals who reported nonsmoking at the previous time period and who had data for the subsequent time point (Wave 1 to Wave 2, N = 402; Wave 2 to Wave 3, N = 386). For the cessation of smoking, the same procedure was followed. Odds ratios and 95% confidence intervals were calculated. The sample for the cessation data was based on individuals who smoked at the previous time period and compared those who quit smoking to those who did not quit at the subsequent time period (Wave 1 to Wave 2, N = 186; Wave 2 to Wave 3, N= 160).

For individuals who were smokers and did not stop smoking, we were interested in determining if partners' smoking status decreased the spouses' number of cigarettes smoked per day. For these analyses, linear regression models were used with the dependent variable being number of cigarettes smoked. Similar to the earlier analyses, demographic variables were included as covariates. In total, there were 4 linear regression models (2 models were used to assess

husband's influence on his wife's decreased use at Wave 2 and Wave 3 and 2 models to assess wife's influence on her husband's decreased use at Wave 2 and Wave 3).

Before selecting the final models, regression model assumptions were checked by examining the residuals. Cases with residuals greater than 2 or less than -2 were examined (Menard, 2002). Additionally, the residuals were graphically examined to identify cases that did not fit the model as well (Norusis, 1999). The distribution should follow a binomial distribution, but will approximate a normal curve for larger sample sizes (Menard, 2002). No violations were detected. Outliers and possible influential points were assessed by high leverage values. Cases with leverage values greater than the expected values ((k+1)/N, where k is the number of predictors) were examined (Menard, 2002). The results did not change with the removal of these cases. Further, the overall fit of the logistic models was assessed using Hosmer and Lemeshow's (2000) goodness of fit test. Only variables that improved the log-likelihood ratio were included in the final models.

Results

Smoking Prevalence and Spouse Similarity

About a third of the men (32.3%) and slightly fewer women (28.0%) reported cigarette smoking at Wave 1. These rates remained fairly stable across time. At each assessment, concordance for smoking status was high. Of the husbands who reported smoking at Wave 1, about 56% had a wife who smoked (Table 1). At Wave 2, 53% of husbands who smoked also had a wife who smoked and at Wave 3, this rate was 51%.

In general, fewer men and women resumed smoking compared to the number who stopped smoking. From Wave 1 to Wave 2, 25 women (6.0% of Wave 1 nonsmokers; all had previously smoked) resumed smoking and from Wave 2 to Wave 3, 20 women (5.0% of Wave 2 nonsmokers; 2 were first time initiators) resumed smoking. Among men, 17 (4.7% of Wave 1 nonsmokers; 1 was a first time initiator) resumed smoking at Wave 2 and 12 (3.6% of Wave 2 nonsmokers; all had previously smoked) resumed smoking at Wave 3. Thirty (16.0% of Wave 1 smokers) women quit smoking from Wave 1 to Wave 2 and 20 (13.0% of Wave 2 smokers) quit at Wave 3. For the men, 22 (11.7% of Wave 1 smokers) stopped smoking at Wave 2 and 19 (11.7% of Wave 2 smokers) stopped at Wave 3.

Partner Influence on Smoking Relapse

Bivariate logistic regression models were used to assess spousal influence and smoking relapse. We considered changes in smoking status from Wave 1 to Wave 2, and for Wave 2 to Wave 3. Among nonsmoking women, those who were married to smokers were more likely to smoke at Wave 2 and Wave 3 (Wave 2: Odds Ratio [OR] = 7.1, 95% confidence interval [CI]: 3.0-17.1, $p < .001$; Wave 3: OR=3.5, 95% CI: 1.3-9.1, $p < .05$). However, this was not true for the men. Nonsmoking men were not more likely to resume smoking at either wave if married to smokers compared to nonsmokers.

In the multivariate models controlling for the demographic variables, similar findings emerged. At Wave 2, only one demographic variable was significant and at Wave 3, none of the demographic variables were significant (Table 2). Women who had children prior to this marriage were more likely to resume smoking at Wave 2 (OR = 3.5, 95% CI 1.3-8.9, $p < .05$). After controlling for the demographic variables, husband's influence on wife's relapse to smoking was evident at both Waves 2 and 3. At Wave 1, nonsmoking women with partners who smoked, compared to women whose husbands did not smoke, were more likely to resume smoking at Wave 2 (OR = 5.5, 95% CI: 2.2-13.6; $p < .001$). Similarly, women who were nonsmokers at Wave 2 and married to smokers were more likely to smoke at Wave 3, compared to women married to nonsmoking husbands (OR= 3.0, 95% CI: 1.1-8.1, $p < .05$).

Spousal influence on smoking relapse, however, appears to be unidirectional. That is, although husband's smoking status predicted his wife's smoking in the early years of marriage, there was no evidence to suggest that wife's smoking status predicted her husband's subsequent smoking. Several demographic variables, however, were associated with smoking relapse. Husbands who were unemployed were more likely to resume smoking at Wave 2 (OR = 4.8, 95% CI 1.4-16.4, $p < .05$) and those with less education (high school or less) were more likely to resume smoking at Wave 3 (OR = 4.1, 95% CI: 1.3-13.5, $p < .05$). In both multivariate logistic regression models (Wave 1 to Wave 2 and Wave 2 to Wave 3), wife's current smoking status was not a significant predictor of husband's smoking relapse after controlling for the demographic factors.

Partner Influence on Smoking Cessation

In the bivariate analyses, there was some evidence to suggest that both husbands and wives were more likely to stop smoking at Wave 2 if they were married to nonsmokers at Wave 1 (women's Wave 2 cessation: $p = .068$; men's Wave 2 cessation: $p = .069$). However, this was not the case for Wave 3 cessation. That is, men and women were not more likely to be nonsmokers at Wave 3 when married to nonsmokers at Wave 2. In the multivariate models, women who did not have children prior to marriage were more likely to stop smoking at Wave 2 (OR = 7.0, 95% CI: 2.6-18.5, $p < .001$) but not at Wave 3. None of the other demographic variables were significant. After considering the demographic variables, support for husband's influence for his wife's smoking cessation was not found. Husbands who were nonsmokers at Wave 1 did not influence their wives' smoking cessation at Wave 2. Husbands' smoking status at Wave 2 did not influence wives' cessation at Wave 3. There was some evidence to suggest that a wife's smoking status at Wave 1 was related to her husband's cessation of smoking at Wave 2 ($p = .064$) even after controlling for demographic variables; however, this was not found for wife's influence from Wave 2 to Wave 3.

Although partner's smoking status did not significantly influence the other's cessation of smoking, we were interested in determining if smokers married to nonsmokers were more likely to reduce the amount they smoked. For wives' cigarette use at Wave 2, women who were employed at Wave 1 ($\beta = -.166$, $p < .01$) and those who smoked less at Wave 1 ($\beta = .684$, $p < .001$) smoked less at Wave 2. After controlling for the demographic variables and amount of cigarettes smoked per day at Wave 1, husbands' smoking was not predictive of the number of cigarettes women smoked at Wave 2. For Wave 2 to Wave 3, older women ($\beta = -.153$, $p < .01$) and women who smoked less at Wave 2 ($\beta = .774$, $p < .001$) smoked fewer cigarettes at Wave 3. Among women who smoked at Wave 2, husbands' smoking was significantly associated with the amount the women smoked at Wave 3 ($\beta = -.123$, $p < .05$). Among men, fewer cigarettes smoked at Wave 1 ($\beta = .713$, $p < .001$) and fewer months of cohabitation prior to marriage ($\beta = .127$, $p < .05$) were associated with less smoking at Wave 2. Unemployed husbands at Wave 2 ($\beta = .147$, $p < .05$) and those who smoked less at Wave 2 ($\beta = .741$, $p < .001$) also smoked less at Wave 3. After controlling for demographic variables and the amount of cigarettes smoked per day at the previous wave, wives did not influence their husbands' tobacco use at either Wave 2 or Wave 3.

Discussion

The goal of this report was to examine smoking patterns and influences in couples through the early years of marriage in a sample of individuals who were not involved in a smoking cessation program. We were interested in determining whether the smoking behaviors of one partner affect his or her partner's smoking or nonsmoking status. Overall, there was some support that a partner who smokes did influence the other's smoking. However, the findings were different for relapse and cessation, and for husband's influence compared to wife's influence.

Over the transition to marriage, the pattern of smoking among married couples was fairly stable. At the first assessment, about one-third of the sample reported that they were current smokers and more than half of the smokers in the sample had a partner who also smoked. These rates are slightly higher, but generally comparable, to the prevalence reported by the US Centers for Disease Control and Prevention (2004) (29.2% for men, 24.1% for women). Quit rates and start rates were low for both the men and women in the sample. It is difficult to compare these rates to other samples, however, because most of the information about smoking quit rates is derived from samples of individuals involved in treatment to quit smoking (Green, 1995). Studies that do consider spontaneous cessation of smoking are often samples of pregnant women (Ockene et al., 2002).

The primary focus concerned whether spouses influenced each other's smoking behavior. As previously discussed, the small number of true initiators at each time point necessitated combining these true initiators and those who relapsed into one group. There was evidence to suggest that in the early years of marriage, women who are married to smokers are more likely to resume smoking. Others have also found a significant relationship between smoking initiation in women and a partner who smokes (Daly et al., 1993; Severson et al., 1995). Spousal influence, however, did not work in the reverse. That is, men who were married to smokers, compared to those who were married to nonsmokers, were not more likely to initiate smoking or relapse. Similarly, others have not found a relation between a wife's smoking status and her husband's smoking (Hymowitz, Sexton, Ockene, & Grandits, 1991). Wetter and colleagues (2004) assessed predictors of changes in smoking behaviors among college students and found that a romantic partners' smoking status did not predict nonsmokers becoming smokers. However, unlike our sample of newly married adults, their sample consisted of college students who were all under 24 years old and predominantly European American. Additionally, only two assessments were completed over a 4 year period, so it is possible that changes in smoking behaviors during the four years were not captured (i.e. participants could have quit and relapsed several times during the four years).

There are a number of possible reasons for finding an influence of husband's smoking on his wife's smoking but not the reverse. At each wave, more men reported smoking compared to women; therefore, it is possible that being male may be a sufficient risk factor for smoking and, therefore, husbands do not need an outside influence (i.e., his partner) to initiate or return to smoking. In a recent review of the development of adolescent smoking, male gender was significantly associated with several stages of smoking (trying cigarettes, experimenting, and regular smoking) (Mayhew, Flay, & Mott, 2000). It is also possible that there are other, gender-specific risk factors involved in smoking relapse that make women more likely to return to smoking. In a study of risk factors and smoking, Soldz and Cui (2001) found that the belief that smoking was a valid approach to control weight was a stronger predictor of heavy smoking among girls compared to boys. Also, sociability has been related to smoking among females, but not males (Killen et al., 1997). Based on this notion, it is possible that women whose partners smoke are more likely to smoke in order to be more social and possibly more compatible with their partners.

We found an influence of husband's smoking on his partner's smoking; however, in other analyses of this sample, we have found different patterns of spousal influence for different substances. For instance, in a study of spousal influence and marijuana use in married couples (Leonard & Homish, in press), the opposite influence pattern was identified; that is, wives significantly influenced their husbands' initiation of marijuana use, but husbands did not influence their wives' initiation. Leonard and Mudar (2003,2004) found that husbands' premarital drinking was predictive of wives' drinking at the couples first anniversary and that wives' drinking at the first anniversary predicted husbands' drinking at the second anniversary. Although evidence suggests that the spousal influence may not be the same across substances,

or at different stages of marriage, it is clear that spouses do influence their partner's substance use. The reason for the differential influence patterns across different substances is not entirely clear. Because both marijuana use and heavy alcohol consumption may disrupt interpersonal functioning, wives may be more likely to set the standard for the use of these substances. Smoking does not have this same interpersonal impact. Wives may hold some expectations about smoking, but these may be restrictions regarding the time or place (e.g., not in the home) of use, rather than use per se. Alternatively, because both marijuana and alcohol are involved with socializing behaviors, wives may exert an influence through their impact on the couple's pattern of socializing. In contrast, smoking may be less tied to socializing outside the couple, and less subject to these influences. Further research is needed to explicate the processes underlying these differential influence patterns.

Our findings provided some support that spouse's may influence each other's smoking cessation, although this evidence was not very strong. For instance, partner influence for smoking cessation at Wave 2 was suggested for both men and women in the bivariate analyses. Additionally, in the multivariate models, women's smoking status at Wave 1 was associated with her husband's cessation at Wave 2 (at a trend level). For those who did not quit, there was some evidence to suggest that spousal influence was involved in reducing the amount of smoking. From Wave 2 to Wave 3, women who smoked were more likely to reduce the amount they smoked when married to nonsmokers compared to women who were married to smokers. It is possible that with a longer follow-up assessment, these individuals who cut down on their smoking would eventually stop smoking.

It is not entirely surprising that partner influence was found to be a stronger influence in the relapse models compared to the cessation models. The addictive nature of tobacco makes cessation efforts difficult, while increasing the likelihood of relapse among those who do make a quit attempt. Using data from the National Comorbidity Survey, Anthony and colleagues (1994) assessed the prevalence of dependence of alcohol, tobacco, controlled substances, and inhalants. Of the substances they considered, the rate of dependence among tobacco users was higher compared to the rate of dependence among other substance users. About one-third of smokers were dependant on tobacco, whereas 15% of drinkers were dependant on alcohol. Given the addictive qualities of tobacco, the behavior of one's partner may not provide sufficient influence to lead to a complete cessation. Instead, it may prompt individuals to make a series of smaller steps in preparation for complete cessation. Consistent with the Transtheoretical Model of Changes in smoking behavior (Prochaska & DiClemente, 1983;Prochaska, DiClemente, & Norcross, 1992), the influence of one's partner might be to move an individual from a pre-contemplative to contemplative or preparation stage in which the individuals are thinking about making a change and have made small attempts towards this change (e.g., reducing amount smoked) (Prochaska et al., 1992). Further, although beliefs about the positive health effects of quitting smoking are related to smoking cessation (e.g., West, McEwen, Bolling, & Owen, 2001), it is possible that changes in individuals' beliefs about health and smoking take a longer period of time than the periods we observed here. In a large sample of smokers, it was found that over 6 months, behavior changes towards smoking cessation were not evident without intervention (Schumann, Meyer, Rumpf, Hapke, & John, 2002).

In this report, we found support that one spouse's smoking impacted his/her partner's smoking. There are likely to be other factors that mediate or moderate this relation. Leonard and Mudar (2004) investigated potential moderators of spousal influence and alcohol consumption. They found that, during the transition to marriage, several factors moderated the process of husband's alcohol consumption influencing his wife's alcohol consumption. Namely, interpersonal dependence, size of the peer network, and the belief that alcohol had a positive effect on the relationship were significance moderators of this influence processes. Future work will need

to consider whether these moderators are substance specific, or related more generally to substance use.

In addition to partner influence, there are many other cognitive and behavioral processes that are involved in smoking cessation and relapse. For example, changes in one's attitudes about smoking (Gibbons & Eggleston, 1996), attitudes about smokers (Gibbons & Eggleston, 1996), or overall health beliefs concerning smoking (Rose, Chassin, Presson, & Sherman, 1996) may be related to changes in smoking. Additionally, the social environment could also affect change in current smoking through modeling (Grove, 1993; Morgan, Ashenberg, & Fisher, 1988), availability of cigarettes (Carter & Tiffany, 2001; Juliano & Brandon, 1998), negative social support (Glasgow, Klesges, & O'Neill, 1986), or positive social support (Mermelstein et al., 1986).

Several limitations to this report need to be considered. Smoking status was self-reported and we did not confirm this status using any biochemical methods. However, Wagenknecht and colleagues (1992) compared self-report measures to biochemical results in sample of over 5000 young adults and found that self-report was an accurate estimate of smoking status. The rates of individuals who either started or stopped smoking during our time period were low. This could have affected our power to detect spousal influence patterns. Additionally, our assessments were one year apart so it is possible that individuals stopped smoking and relapsed several times throughout the year. Also, we do not have detailed pregnancy information and, therefore, cannot assess how factors such as pregnancy or breastfeeding may have affected smoking rates. We also did not differentiate between those who relapsed to smoking compared to those who initiated smoking for the first time. However, true initiation of smoking is less common in adults compared to adolescents, (Chassin, Presson, Rose, & Sherman, 1996;Chen & Kandel, 1995) and this was also true for our data with less than 3 individuals considered true initiators at any time point. Although we identified some spousal influence patterns, it is also possible that there was some influence occurring prior to marriage. However, Bachman and colleagues (1997) considered the effects of engagement and marriage separately and found that, compared to marriage, the effects of engagement on smoking behaviors were quite modest and only significant among women.

Despite these limitations, this work used a longitudinal study of married adults in the general population to assess the influence one partner has on his or her spouses smoking behaviors. Importantly, we found that during the early years of marriage, partners do influence the resumption of smoking. This is especially true for the influence that a husband's smoking status has on his wife. Although we did not find strong evidence for spousal influence of smoking cessation, there was some evidence that smokers married to nonsmokers are more likely to decrease their tobacco use, thus suggesting promise for intervention programs for married couples. Future work should determine whether spousal influence continues in the later years of marriage and whether subsequent transitions in family life, such as having children, has an impact on smoking and other substance use.

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Table 1

Smoking Similarity at each Wave for Couples With Smoking Data for all Assessments (N= 468 couples)

		Wife Smokes, Time 1	
		Yes (N = 129)	No (N = 339)
Husband Smokes, Time 1	Yes (N = 151)	56.3%	43.7%
	No (N = 317)	13.9%	86.1%
		Wife Smokes, Time 2	
		Yes (N = 114)	No (N = 354)
Husband Smokes, Time 2	Yes (N = 146)	52.7%	47.3%
	No (N = 322)	11.5%	88.5%
		Wife Smokes, Time 3	
		Yes (N = 113)	No (N = 355)
Husband Smokes, Time 3	Yes (N = 139)	51.1%	48.9%
	No (N = 329)	12.8%	87.2%

NOTE: For each time point, χ_1^2 p< .001

Table 2

Partner Influence and Relapse/Cessation of Smoking

Outcome	Predictors	Wave 1 to Wave 2 OR	95% CI	Wave 2 to Wave 3 OR	95% CI
Wife Relapses					
	Husband Smokes	5.5***	2.2-13.6	3.0*	1.1-8.1
	Wife a Parent Prior to this Marriage	3.5*	1.3-8.9	NS	
Husband Relapses					
	Wife Smokes	NS		NS	
	Unemployed	4.8*	1.4-16.4	NS	
	Less Education	NS		4.1*	1.3-13.5
Wife Stops Smoking					
	Husband Does Not Smoke	NS		NS	
	Wife Not a Parent Prior to this Marriage	7.0***	2.6-18.5	NS	
Husband Stops Smoking					
	Wife Does Not Smoke	2.4†	.95-5.8	NS	

Notes: OR: Odds Ratio; CI: Confidence Interval; Results are from the multivariate logistic models, only significant covariates are included in the above table

† p < .06

* p < .05

** p < .01

*** p < .001