BRIEF REPORT

Perceptions of Smoking-Related Risk and Worry Among Dual-Smoker Couples

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ABSTRACT

Introduction: Quit rates are lower and relapse rates are higher for people in close relationships with a partner who smokes. Although desire to quit is often related to health concerns for one's self, much less is known about psychosocial factors associated with quitting in dual-smoker couples. This study investigated relations among beliefs about smoking and desire to quit from both partners' perspectives.

Methods: We recruited 63 couples in which both partners smoke daily. Participants were aged 21–67 ($M = 43.0$, $SD = 11.3$) and had been smoking for 4–51 years ($M = 22.9$, $SD = 11.3$).

Results: Individuals' desire to quit related to worry about partner's health ($r = .29$, $p < .01$), perceived risk of partner getting a disease if the partner continues to smoke ($r = .39$, $p < .001$), and belief that own smoking has caused partner physical harm ($r = .38$, $p < .001$). Within couples, partners were modestly concordant with regard to worry about harm of smoking for oneself ($r = .30$, $p < .05$) and partner ($r = .30$, $p < .05$), perceived risk of disease for oneself ($r = .26$, $p < .05$) and partner ($r = .24$, $p < .05$), and desire that partner quit ($r = .34$, $p < .01$). Participants had an extremely strong desire (78% = 7 on 1–7 scale) for their partner's help if they attempt to quit.

Conclusions: Dual-smoker couples are at heightened health risks due to exposure to passive smoke and their own smoking. Partners' perceived risk and worry about the harms of smoking could be important leverage points for smoking cessation efforts. Interventions can be informed by considering both partners' beliefs and by helping partners develop plans for quitting and supporting each other.

Relationship partners often engage in similar health behaviors such as dietary intake, exercise habits, and substance use, including smoking (Meyler, Stimpson, & Peek, 2007). Estimates of married smokers who have a smoking partner (i.e., dual-smoker couples) range from about one third in a sample of newly married couples (Homish & Leonard, 2005) to two thirds in a sample of low-income pregnant women (Kendrick et al., 1995). Persons' health risks are amplified due to exposure to both their own and partner's smoking (Reardon, 2007; U.S. Department of Health and Human Services, 2006). Coupled with the fact that quit rates are lower and relapse rates are higher among dual-smoker couples (Ferguson, Bauld, Chesterman, & Judge, 2005; Garvey, Bliss, Hitchcock, Heinold, & Rosner, 1992), intervention is needed. A review by Palmer, Baucom, and McBride (2000) concludes that having a smoking partner is a significant

threat to abstinence. Achieving cessation in this group is a major public health challenge as most interventions that have focused on couples and attempted to leverage spousal influence and support to enhance quitting have met with negative results (Cohen, Gottlieb, & Underwood, 2000; McBride et al., 2004). We are unaware of an intervention developed specifically for dual-smoker couples. New insights on couple-based strategies that enhance quitting are needed to meet this public health challenge.

Most models of health behavior describe perceptions of one's own health risks as a major factor underlying motivation to change behavior (Aiken, Gerend, Jackson, & Ranby, 2012). This is especially true in the smoking literature in which strong positive associations exist between risk perceptions and desire to quit among current smokers (Dillard, McCaul, & Klein, 2006; Norman, Conner, & Bell, 1999). Smoking, however, has

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direct health risks not only for the individual but also for the partner. Hence, beliefs about how smoking affects one's partner are important to consider in motivating desire to quit and in understanding maintenance of cessation.

This study examined associations between desire to quit, expressed by partners in dual-smoker relationships, and respondents' perceptions of own and partner's risk of disease, beliefs about damage to health from smoking, and worry about negative health outcomes. Distinct from a belief or judgment about risk for disease, worry captures a more affective aspect of possible future negative health consequences. Indeed, worry about developing a smoking-related disease may be an even more important predictor of contemplation to quit smoking than perceived risk (Magnan, Koblitz, Zielke, & McCaul, 2009). We examined concordance of beliefs, attitudes, and desires within couples to understand associations between relationship partners. We hypothesized that beliefs about harm to self and harm to one's partner would be related to one's own desire to quit (McCaul et al., 2006). We also hypothesized that desire for the partner to quit would be related to beliefs about harm to both the self and partner. We expected that partners would exhibit some degree of similarity related to smoking beliefs as they were both current smokers and had been in a relationship for an extended period of time.

METHODS

Participants

We recruited 63 dual-smoker couples (126 individuals) from the community in central North Carolina. To be eligible couples had to be in a committed relationship and live in the same household, and both members had to be more than 21 years old and smoke at least one cigarette per day. After 16 couples participated, the survey was expanded to include several additional items; therefore, analyses involving these items (e.g., perceived risk for partner) include 94 participants.

Design

Advertisements were put on Craigslist, in local newspapers, and circulated in the community to recruit couples in which both partners smoke for a study on thoughts about smoking cessation in couples. In all, 130 persons responded to advertisements. Of these, 71 couples were screened and eligible (25 had partner not interested/able to be reached, 18 did not live with partner, 11 had participated in a previous study by our research team, and 5 did not meet other inclusion criteria). Both partners in 63 couples consented and participated in the 20-min survey. Participants received \$10 for participation.

Measures

Perceived Risk for Self and Partner

Participants rated the chance that they would get a serious smoking-related disease in their lifetime if they do not quit smoking (1 = no chance to 7 = certain to happen; Diefenbach, Weinstein, & O'Reilly, 1993). Participants also rated the chance that their partner/spouse would get a serious smoking-related disease in their lifetime if their partner/spouse did not quit smoking.

Damage to Health of Self and Partner

In separate items, participants were asked to what extent, if at all, their own smoking has damaged their health and the health of their partner/spouse on 4-point scales (1 = not at all to 4 = a lot).

Worry for Self and Partner

Dijkstra and Brosschot's (2003) 4-item self worry scale asked participants to rate the extent (1 = not at all to 5 = extremely) that they worry about their own health because of their own smoking. A separate 4-item scale asked about worry that one's own smoking behavior affected one's partner. Both self and partner worry scales exhibited good reliability (coefficient alphas = .89 and .94, respectively).

Desire to Quit for Self and Partner

In separate items, participants were asked about the strength of their desire to stop smoking and for their partner to stop smoking at this time (1 = not at all strong to 7 = extremely strong).

Desire for Help From Partner in Quitting

Participants were asked if they were to decide to quit smoking, how strong is their desire to have their partner help them quit (1 = not at all strong to 7 = extremely strong).

Quit Attempt History

Participants reported the last time that they had "seriously tried to quit smoking" and the last time that they and their "partner/spouse seriously tried to quit smoking together" (less than 6 months ago, more than 6 months ago, or never).

Stage of Change

Participants' stage of change was categorized as precontemplation (not planning to stop in next 6 months), contemplation (planning to stop in next 6 months, but not next 30 days), and preparation (planning to stop in next 30 days).

Statistical Analyses

Analyses performed on individual level data took into account that individuals were nested within couples. Standard errors and significance tests were adjusted accordingly. Correlations and one-way ANOVAs were computed in Mplus 6.1 using type=complex. Paired sample *t* tests were performed using the proc mixed command in SAS 9.3.

RESULTS

Participant Characteristics

Participants were aged 21–67 ($M = 43.0$, $SD = 11.2$) and had been smoking for 4–51 years ($M = 23.3$, $SD = 11.4$) with a current average of 17 ($SD = 8.8$; range = 2–50) cigarettes per day. The sample was primarily African American/Black (61%), followed by White/Caucasian (30%) participants. A wide range of educational backgrounds were represented: 18% less than high school, 32% high school graduate, 36% some college or technical/trade school, 12% college graduate, and 3% postgraduate.

Smoking-related beliefs of dual-smoker couples

Most reported a previous quit attempt (20% in the past 6 months, 56% more than 6 months ago, and 23% never tried to quit). Some (40%) reported trying to quit with their partner. Only 42% of couples, however, agreed about their joint quit attempt history. People who tried to quit smoking in the past 6 months had higher perceived risk ($M = 5.6$, $SD = 1.4$; $\beta = .21$, $SE = .08$, $p < .05$), reported greater damage to health from smoking ($M = 3.1$, $SD = .7$; $\beta = .21$, $SE = .06$, $p < .01$), and more worry about physical consequences for self ($M = 4.1$, $SD = .9$; $\beta = .34$, $SE = .08$, $p < .001$) than those who had not tried to quit in the past 6 months ($M = 4.9$, $SD = 1.4$; $M = 2.7$, $SD = .9$; $M = 3.2$, $SD = 1.0$), respectively.

When asked about future quit attempt plans, all three stages of change were represented (35% precontemplation, 36% contemplation, and 29% preparation); 54% of the couples reported being in the same stage. Providing validity for our measures, stage of change was significantly related to perceived risk ($\beta = .48$, $SE = .07$, $p < .001$; precontemplation mean = 4.11, $SD = 1.5$, contemplation mean = 5.4, $SD = 1.2$, preparation mean = 5.81, $SD = 1.1$) and worry for self ($\beta = .58$, $SE = .06$, $p < .001$; precontemplation mean = 2.7, $SD = 1.0$, contemplation mean = 3.3, $SD = .9$, preparation mean = 4.2, $SD = .7$). Quantity smoked was related within couples ($r = .32$, $p < .01$); 56% of couples reported approximately equal (within 5) cigarette use.

Correlates of Desire to Quit

The first column of Table 1 shows correlations between self and partner ratings of beliefs with own desire to quit smoking. One's desire to quit smoking was correlated with their own perceived risk of a serious disease, belief that smoking has damaged their own health, and worry about the physical consequences of their own smoking on their own health. Further, their own desire to quit was related to their own ratings of their partner's risk, damage to partner's health, and worry about their partner. No associations between partner's ratings of these same constructs with own desire to quit were significant.

Correlates of Desire That Partner Quit

The second column of Table 1 shows correlations of beliefs with desire for one's partner to quit which was related positively to participants' beliefs about partner's risk, damage to partner's health, and worry about the physical consequences of smoking for their partner. Partner's worry about their own health was also related to desire for the partner to quit.

Concordance of Beliefs Within Couples

Table 2 shows correlations within couples. Perceived risk for the self and partner as well as worry about consequences of smoking for self and partner were modestly related within couples. Partners did not share similar ratings on their own desire to quit smoking but they shared similar desires for their partner to quit smoking.

Beliefs About Own Smoking Compared With Partner's Smoking

Table 2 shows descriptive statistics for beliefs about self and partner using all available data for each item. Paired samples t

Table 1. Self and Partner Correlates of Desire for Self and Partner to Quit Smoking

	Desire self to quit	Desire partner to quit
Beliefs about self		
Perceived risk	.34***	.14
Damage to health	.26***	.12
Worry about consequences	.47***	.43***
Beliefs about partner		
Perceived risk	.39***	.30***
Damage to health	.38***	.42***
Worry about consequences	.29***	.43***
Partner's beliefs about his/her self		
Perceived risk	.07	.02
Damage to health	.10	.09
Worry about consequences	.15	.21**
Partner's beliefs about partner		
Perceived risk	.08	.19
Damage to health	.20*	.25**
Worry about consequences	.13	.18

Note. * $p < .10$; ** $p < .05$; *** $p < .01$.

Table 2. Concordance Within Couples on Beliefs and Desire to Quit Smoking

	Range	<i>N</i>	Mean (<i>SD</i>)	Correlation within couples
Perceived risk for self	1–7	126	5.1 (1.5)	.26*
Damage to health for self	1–4	126	2.8 (0.8)	.13
Worry about consequences for self	1–5	126	3.4 (1.1)	.30*
Perceived risk for partner	1–7	94	5.2 (1.3)	.24*
Damage to health for partner	1–4	94	2.7 (1.0)	.18**
Worry about consequences for partner	1–5	126	3.2 (1.3)	.30*
Desire for self to quit	1–7	126	4.6 (1.9)	.06
Desire for partner to quit	1–7	94	5.7 (1.6)	.34*

Note. * $p < .05$; ** $p < .10$.

tests compared participants' own and partner ratings using data from the 94 participants who had complete data on both ratings within each comparison. The means reported below are based on this subsample of 94 participants. Respondents' beliefs about their own risk for disease ($M = 5.3$, $SD = 1.4$) and their beliefs about their partner's risk for disease ($M = 5.2$, $SD = 1.3$) did not differ ($t_{(156)} = .08$, $p = .77$, ns). Participants reports about how their own smoking had damaged their own health ($M = 3.0$, $SD = .8$) and their partner's health ($M = 2.7$, $SD = 1.0$) also did not differ ($t_{(156)} = 1.65$, $p = .20$, ns). Participants did, however, worry more about the physical consequences of smoking for themselves ($M = 3.4$, $SD = 1.1$) than their partner ($M = 3.2$, $SD = 1.3$, $t_{(188)} = 4.37$, $p < .05$). Further, desire for one's partner to quit ($M = 5.7$, $SD = 1.6$) exceeded one's own desire to quit ($M = 4.9$, $SD = 1.8$, $t_{(156)} = 33.4$, $p < .001$).

DISCUSSION

This study reports correlates of desire to quit and concordance of smoking beliefs within high-risk dual-smoker couples. To our knowledge, this is the first examination of smoking beliefs from the perspective of both partners. As shown across a range of individually focused smoking studies, beliefs about negative outcomes for the self are strongly correlated with desire to quit (McCaul et al., 2006). This study expands this picture, suggesting that concerns about how smoking negatively affects the health of one's partner are also important.

Interestingly, participants' desire for their partner to quit was stronger than their own desire to quit. Future research that elucidates the mechanisms underlying this association could provide novel messages and interventions for smoking couples. For example, if this association means that individuals care more about their partner's health than their own health, one could possibly use such concerns to help transform motivation to quit smoking (Lewis et al., 2006). It is possible that people recognize that it would be difficult to quit if one's partner continues to smoke and therefore, report a stronger desire for their partner to quit at this time. This association could also support novel recruitment methods (e.g., participate to help your partner) for smoking cessation studies.

This study supports the need for couple-based interventions for smoking cessation. First, a vast majority indicated they would need their partner's help if they were to quit. Many had attempted to quit individually or with their partner in the past, but attempts had been unsuccessful suggesting that what people are trying on their own is not working. In addition to encouraging concurrent behavior change, couple-based interventions can capitalize on concerns for the partner and relationship within intervention messages. For example, framing messages to emphasize couple-focused outcomes (e.g., we can live a healthier life) or smoking cessation as a shared, communal goal may be especially powerful for dual-smoker couples. Alternatively, given that partners' own desire to quit was not significantly correlated within couples, tailored interventions could either target couples in the same stage or use the higher quit motivation of one partner to foster motivation in the other partner (Lewis & McCormack, 2008). Couples would likely benefit from support in communicating about cessation efforts given that fewer than half of couples in this study agreed about when a past joint quit attempt had occurred which suggests a lack of communication about plans. Of note, it is possible that because the interpretation of "serious quit attempt" was left to the individual, partners may have interpreted this question differently. Nevertheless, interventions could improve partners' understanding of each other's quit attempts. Once partners decide to try to quit together, a cessation counselor might help them develop implementation intentions (Gollwitzer, 1999) about how and when they will carry out specific aspects of behavior change. It may be particularly important for couples who are often engaging in joint activities to have a specific plan about when they will smoke their last cigarette and what strategies they will engage in to help each other avoid smoking temptations. In this study, a vast majority indicated the desire for their partner's help if they were to quit; it is unclear, however, what kind of help they might need. Future work should identify the most helpful kinds of support that partners in dual-smoker couples might offer each other. Indeed, clinical interventions

that simultaneously address smoking-related couple dynamics and help partners embark on behavioral changes together may hold special promise when both partners in a couple smoke (Rohrbaugh & Shoham, 2011; Shoham, Rohrbaugh, Trost, & Muramoto, 2006).

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DECLARATION OF INTERESTS

None of the authors have any potential conflicts of interest to disclose.

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