SHORT COMMUNICATION

Psychosocial factors and smoking cessation behaviors among smokers who have and have not ever tried to quit

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Abstract

Relationships between smoking cessation behaviors and demographic characteristics and attitudes were analyzed among two groups of smokers, those who had and had not ever tried to quit. Telephone interviews were completed with 1501 smokers at baseline and at a 3 month follow-up. Multiple logistic regression analyses were used to identify factors that were associated with planning to quit, attempting to quit and quitting smoking within the two groups of smokers. Different patterns of correlates were found across groups and within the three outcome measures, indicating the potential importance of targeting interventions according to whether or not smokers have made a prior quit attempt. These findings also support the value of using multiple outcome measures in the smoking cessation process.

Introduction

Despite substantial declines in prevalence, smoking remains the primary cause of preventable death in the US (Fiore et al., 1989; USDHHS, 1989; McGinnis and Foege, 1993). Self-help, minimal-contact intervention strategies are essential to reducing smoking prevalence because they can reach large, broadly distributed populations at low per person cost (Glynn et al., 1990; Schwartz, 1991). In order to develop effective strategies for motivating the residual group of continuing smokers, it is important to understand how subgroups of the smoking population differ. Recent efforts to improve the effectiveness of self-help programs have focused on understanding and trying to influence psychosocial factors such as smoking-related attitudes, expectancies and motivations (Green, 1984; Mullen et al., 1987; Baer and Lichtenstein, 1988; Glynn et al., 1990; Lichtenstein and Glasgow, 1992). A National Cancer Institute expert advisory panel recommended that self-help minimal-contact intervention programs should emphasize strategies for motivating smokers to quit (Glynn et al., 1990).

According to the Transtheoretical Model of health behavior change, smoking cessation is a process involving a series of stages: precontemplation, contemplation, preparation, action and maintenance (DiClemente et al., 1991; Prochaska et al., 1992). Most people trying to stop their smoking habit do not succeed on their first attempt, but make several action attempts before becoming long-term maintainers (Schachter, 1982). Upon experiencing a relapse, most smokers re-enter the process at an earlier stage (Prochaska et al., 1992). Prochaska and DiClemente (1984) found that, of those who relapse, only about 15% of smokers recycle back to precontemplation, while...
most (about 85%) relapse back to contemplation or preparation.

Among current smokers, there are two groups, those who have never tried to quit smoking and those who have made at least one previous attempt to quit. About 36% of current smokers have never tried to quit (USDHHS, 1990a). When considering smoking cessation behaviors, these individuals are first-attempters because they have no prior experience with the smoking cessation process. Despite the significant proportion of potential first-attempters, little is known about smokers who enter the preparation or action stages for the first time because prior studies have not specifically addressed the characteristics and needs of smokers who have never tried to quit.

A second group of current smokers are those who have tried to quit in the past and therefore are recycling through the smoking cessation process (Cohen et al., 1989; Prochaska et al., 1992). Approximately 37% of all smokers have made one to two attempts, 19% have made three to five attempts and 8% have attempted to quit six or more times in their lifetime (USDHHS, 1990a). The majority (70%) of former smokers report having made one to two attempts before quitting (USDHHS, 1990a). However, while most smokers do not succeed in quitting on their first attempt, the number of attempts to quit smoking is not predictive of success for any given attempt (Cohen et al., 1989).

We are aware of no studies to date that have compared the smoking cessation behaviors of first-attempters and recyclers. Thus, smoking cessation research has overlooked the fact that among smokers in the action stage, there are two potentially different groups attempting to quit. By assuming that all smokers in the action stage have comparable characteristics and needs, smoking cessation interventions may be less effective and efficient.

This paper addresses this gap in the research literature by presenting results from analyses of correlates of smoking cessation behaviors among a general population of smokers who had and had not ever tried to quit. The three goals of the analyses were to identify factors that were associated with: (1) planning to quit smoking within 3 months from baseline, (2) attempting to quit smoking during a 3 month period and (3) quitting smoking during a 3 month period. For each of the three analyses, we compared significant correlates of each smoking cessation behavior within and across the two groups of smokers: those who had never tried to quit smoking and those who had made at least one previous attempt to quit.

**Methods**

**Sample**

Using random-digit dialing procedures, we selected a sample of smokers from residents of the Chicago Metropolitan Statistical Area who were 18 years of age or older and who smoked at least 1 cigarette per day or 7 cigarettes per week (see Warnecke et al., 1991, for a detailed description of sample selection). We interviewed 2353 eligible smokers by telephone (73% response rate) at baseline (Fall 1986) and we then completed telephone follow-up interviews about 3 months later (February 1987, i.e. 1 month before a televised smoking cessation intervention) with 1824 (78%) who were interviewed at baseline. The analysis for this study is based on the subgroup of 1501 respondents who smoked for at least 1 year, who said at baseline that they planned to stop smoking someday and with whom we completed a follow-up interview. We excluded smokers who did not plan to quit smoking someday \( (n = 388; 16.7\% \text{ of baseline sample}) \) because variables measuring motivation and expectancies for smoking cessation behaviors did not apply to them. We classified smokers who planned to quit someday into two categories: those who had never tried to quit smoking in the past \( (n = 389; 25.9\%) \) and those who had tried at least once in the past to quit smoking \( (n = 1112; 74.1\%). \)

**Measurement**

**Dependent variables**

We measured readiness to quit smoking by asking smokers who reported that they planned to quit smoking within 3 months from baseline to indicate their readiness to quit. We measured readiness to quit smoking by asking smokers who reported that they planned to quit smoking within 3 months from baseline to indicate their readiness to quit.
someday if they planned to stop smoking cigarettes within the next 3, 6, 12 or more than 12 months. We coded this dependent variable as a dichotomy according to whether they planned to quit within the next 3 months or not (planned to quit but later than 3 months). We chose this dichotomy because we were interested in the relationships between planning to quit and smoking behaviors at the 3 month follow-up.

Using self-report at follow-up, we measured making a serious attempt to quit as not having smoked for at least 24 h during the previous 3 months (i.e. since the baseline interview). Since the immediate goal of most smoking cessation interventions is to stimulate action, Velicer et al. (1992) have recommended using 24 h abstinence as an initial outcome measure at a 3 month follow-up to indicate that a smoker has taken a minimal amount of action. We measured quitting smoking as not having smoked for at least the last 7 days immediately prior to the follow-up interview, a commonly used minimum period of abstinence (USDHHS, 1990b; Velicer et al., 1992).

Independent variables

Background characteristics. At baseline we measured independent variables that were potential correlates of smoking cessation behaviors. Background characteristics included age, gender, race (white versus non-white), marital status (married or living with a partner versus other), education (high school or less versus some college or more) and employment status (employed full- or part-time versus not employed). We obtained two self-reports of health status. The first was a rating on a four-point scale (very poor to very good) of present health status. The second was a rating on a three-point scale (worse than average, about average or better than average) of health status compared with that of other people of comparable age. We measured current smoking behavior by self-report of the average number of cigarettes smoked per day.

Smoking-related attitudes. We obtained two measures of outcome expectations. Concern about the health effects of smoking was measured on a three-point scale (not at all, somewhat or very concerned) of general concern about the effects of smoking cigarettes. We measured perceived benefit of stopping smoking as the relative reduction in the perceived likelihood of getting lung cancer attributed to quitting. This was computed as a ratio derived from the difference between the perceived likelihoods of ever getting lung cancer if the respondent continues to smoke and if the respondent stopped smoking (both measured on 10-point scales from very unlikely to very likely), divided by the perceived likelihood of getting lung cancer if the respondent continues to smoke.

Efficacy expectations were measured with two items. One was a rating (on a 10-point scale from very little to a great deal) of how much effort smokers thought it would take for them to stop smoking cigarettes. The other was a rating of confidence in their ability to quit, measured by asking smokers how sure (on a 10-point scale from not at all to very) they were that they would stop smoking by the time they said they planned to quit.

We included two measures of influence by significant others. First, we asked smokers if during the past year they had been advised by a health professional, such as a doctor or nurse, to stop smoking. Next, respondents were asked to rate on a four-point scale (not at all, very little, somewhat or very much) how much the people closest to them wanted them to quit smoking.

We collected two measures of motivation to quit smoking. We asked smokers to rate on a four-point scale (none, weak, moderate or strong) their desire to quit. Also, we asked smokers how determined (on a 10-point scale from not at all to very) they were to stop smoking by the time they said they planned to quit.

Analyses

We tested the null hypothesis that smokers who had and had not tried to quit smoking in the past
did not differ on each of the independent variables by using Pearson $\chi^2$ statistics to compare percentage distributions for categorical variables and $t$-tests to compare means for variables measured on scales. We used two-tailed tests with significance levels ($\alpha$) set at 0.05. We also used Pearson $\chi^2$ statistics to test for differences in planning to quit within 3 months, attempting to quit and quitting smoking by whether the smoker had ever tried to quit.

Next, for smokers who had and had not tried to quit, we computed three separate forward stepwise multiple logistic regression analyses to identify the independent variables that were associated with (1) planning to quit in the next 3 months, (2) attempting to quit smoking and (3) quitting smoking. For the analysis of correlates of quitting smoking, all smokers were included regardless of whether they had attempted to quit during the study period. Each regression was computed in three steps. In the first step, background characteristics were entered for potential selection in the models. In the second step, significant variables from the first step were entered into the model and expectations for smoking cessation were entered for potential selection into the model. In the final step, variables measuring motivation, along with variables that were significant in the second step were entered into the model for potential selection along with the other measures of motivation.

We assessed the strength of unique association with each dependent measure for each significant independent variable in the multiple logistic models by computing adjusted odds ratios and 95% confidence intervals. Finally, we tested the main and interaction effects of ever having tried to quit prior to the study by combining all smokers into one group. For these models, the regressions included interaction terms for ever having tried to quit smoking with each covariate that was significant in either of the separate regressions for those who had never tried to quit and for those who had tried to quit in the past.

### Result

#### Background characteristics and smoking-related attitudes

As compared to smokers who had tried to quit in the past, smokers who had never tried to quit were slightly younger (38.0 versus 39.7; $P < 0.05$) and they were more likely to be female (61.4 versus 33.4%; $P < 0.01$). There were no significant differences between the groups by race, marital status, education, employment, health status or cigarettes smoked per day.

At baseline, smokers who had never tried to quit reported significantly less concern about the health effects of smoking (2.2 versus 2.4; $P < 0.001$), less desire to quit (2.6 versus 3.0; $P < 0.001$) and less determination to quit (6.4 versus 7.3; $P < 0.001$) than those who had tried to quit. There were no significant differences between the groups in the benefits of quitting, perceived effort needed to quit, confidence in ability to quit, having been advised to quit by a health professional in the past year or others’ desire for the smoker to quit.

#### Smoking cessation outcomes

At baseline, smokers who had tried to quit in the past were significantly more likely than those who had never tried to be planning to quit within the next 3 months (33.3 versus 15.7%; $P < 0.001$). At follow-up, smokers who had tried to quit in the past also were significantly more likely than those who had not tried to have attempted to quit (38.7 versus 18.0%; $P < 0.001$) and actually quit (14.5 versus 8.0%; $P < 0.001$) during the 3 month study period.

#### Correlates of smoking cessation behaviors

Table I shows the results from the multiple logistic regression analyses for planning to quit smoking within the next 3 months by having ever tried to quit. Among smokers in both groups, those who had more desire and determination were more likely to be planning to quit within the next 3 months. In addition, among smokers who had never tried to quit in the past, those who perceived
less effort required to quit were more likely to be planning to quit. Among smokers who had tried to quit previously, older smokers, males, those who rated their health status lower, those who perceived more benefits of quitting smoking (as measured by relative reduction in lung cancer risk) and those with more confidence in their ability to quit were more likely to be planning to quit within the next 3 months.

When all smokers were combined, we found a significant interaction between having tried to quit in the past and benefits of quitting ($P < 0.05$). The effect of benefits of quitting on planning to quit in the next 3 months was significantly stronger for smokers who had tried to quit in the past than it was for those who had never tried to quit. We also found a significant interaction between having tried to quit and effort needed to quit ($P < 0.01$). The effect of perceived effort needed to quit was significantly stronger for smokers with no prior attempts relative to smokers who had tried to quit at least once in the past.

Table II shows the results from the multiple logistic regression analyses for attempting to quit smoking during the 3 month period by having ever tried to stop smoking. Planning to quit was the strongest correlate of making an attempt to quit among both groups and it was the only variable that was a significant correlate for both groups of smokers. Smokers who planned to quit within the next 3 months were more likely to have attempted to quit during the study period than were those who planned to quit later than 3 months. Also, among those who had never tried to quit, those who were married or living with a partner were less likely to have attempted to quit. However, those who perceived more desire by others for them to quit were more likely to have attempted to quit during the 3 month period. Among smokers who had tried to quit previously, those who smoked less cigarettes per day, perceived less effort required to quit, and had more desire and determination to quit also were more likely to have made a quit attempt during the 3 month period.

When all smokers were combined, we found a significant interaction between having ever tried to quit and determination to quit ($P < 0.05$). The effect of determination to quit on attempting to quit during the 3 month period was significantly stronger for smokers who had tried to quit in the past relative to those with no prior quit attempts.

Table III shows results from the multiple logistic regression analyses for quitting smoking during the 3 month period by having ever tried to stop smoking. Planning to quit smoking within the next 3 months and smoking fewer cigarettes per day were significantly associated with quitting smoking among both groups. Similar to attempting to quit (Table II), planning to quit was the strongest correlate of quitting smoking in both groups. No other variables were associated with quitting smoking among those who had never tried to quit. Among those who had tried to quit previously, smokers with more than a high school education,
those who perceived less effort needed to quit and those with more confidence in their ability to quit were also more likely to quit smoking. When all smokers were combined, there were no significant interactions between ever having tried to quit and other covariates.

**Discussion**

To our knowledge this is the first study to examine separately smokers who have and have not ever tried to quit. Therefore, no published data about smoking cessation outcomes among these two groups are available for comparison with our findings. Our data show that while these groups do not differ greatly in their background characteristics, there are important differences in the factors that are associated with their smoking cessation intentions and behaviors.

We found that those who had tried to quit as compared to those who had never tried to quit were about twice as likely to plan to quit, attempt to quit and actually quit smoking during the 3 month study period. This supports other research that has found that most smokers make multiple quit attempts before successfully stopping their smoking habit (Schachter, 1982; USDHHS, 1990a). We also found different patterns of correlates across groups and within the three outcome measures, indicating the potential importance of targeting interventions according to whether or not smokers have made a prior quit attempt.

Our findings also support the value of using multiple outcome measures for the smoking cessation process (Velicer et al., 1992). While we assessed readiness to quit as well as attempting and quitting smoking, many researchers have focused exclusively on smokers in the preparation stage, for whom attempting to quit is the most relevant outcome measure. However, our findings suggest

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**Table II.** Logistic models for attempting to quit smoking during a 3 month period by ever tried to stop smoking (statistically significant predictors only)

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Never tried to quit (n = 376)</th>
<th>Tried to quit (n = 1073)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>Marital status (married/living with partner = 1)</td>
<td>0.49 (0.29-0.86)</td>
<td>0.97 (0.96-0.99)</td>
</tr>
<tr>
<td>Cigarettes smoked per day (1-65)</td>
<td>1.44 (1.01-2.05)</td>
<td></td>
</tr>
<tr>
<td>Others' desire for smoker to quit (1-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effort needed to quit (1-10)</td>
<td>0.94 (0.90-0.99)</td>
<td></td>
</tr>
<tr>
<td>Desire to quit (1-4)</td>
<td>1.20 (1.01-1.43)</td>
<td></td>
</tr>
<tr>
<td>Determination to quit (1-10)</td>
<td>1.11 (1.05-1.18)</td>
<td></td>
</tr>
<tr>
<td>Plan to quit (within next 3 months = 1)</td>
<td>2.93 (1.57-5.49)</td>
<td>2.45 (1.83-3.27)</td>
</tr>
</tbody>
</table>

**Table III.** Logistic models for quitting smoking during a 3 month period by ever tried to stop smoking (statistically significant predictors only)

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Never tried to quit (n = 376)</th>
<th>Tried to quit (n = 1073)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>Cigarettes smoked per day (1-65)</td>
<td>0.95 (0.91-0.99)</td>
<td>0.96 (0.94-0.98)</td>
</tr>
<tr>
<td>Education (some college = 1)</td>
<td>1.81 (1.23-2.64)</td>
<td></td>
</tr>
<tr>
<td>Effort needed to quit (1-10)</td>
<td>0.91 (0.85-0.97)</td>
<td></td>
</tr>
<tr>
<td>Confidence in ability to quit (1-10)</td>
<td>1.11 (1.03-1.19)</td>
<td></td>
</tr>
<tr>
<td>Plan to quit (within next 3 months = 1)</td>
<td>4.63 (2.08-10.29)</td>
<td>2.37 (1.64-3.43)</td>
</tr>
</tbody>
</table>
that to be most sensitive to the stage in which a smoker is in at any given time, it appears to be important to use multiple outcome measures to assess progression through the stages of change. Thus, an appropriate outcome measure for an intervention to motivate smokers in the contemplation stage is planning to quit soon, among those in preparation it is making an attempt to quit, and among those in the action stage it is quitting and maintaining abstinence.

Planning to quit smoking

Interventions should focus on increasing self-efficacy and motivation for all smokers, as evidenced by our findings that these factors were significant correlates of planning to quit among both groups in this analysis. In addition, among smokers who have tried to quit in the past, interventions should reinforce the health benefits of quitting smoking and relate these to smokers’ current health status. These factors especially should be emphasized among younger smokers and women, who were less likely to be planning to quit smoking within the next 3 months in our study.

Attempting to quit smoking

Among both groups of smokers, planning to quit soon (within the next 3 months) was the strongest correlate of making an attempt to stop smoking during the study period. This agrees with other studies of readiness to quit smoking (DiClemente et al., 1991) and reinforces the importance of focusing on psychosocial factors associated with planning to quit in order to motivate smokers to make a quit attempt.

Among smokers who have never tried to quit, there was also a positive effect of a smoker’s perceived desire by others for them to quit on making an attempt to stop smoking. Therefore, interventions should focus on encouraging support from significant others to motivate smokers to make a first attempt to stop smoking.

We also found that among smokers who had never tried to quit, those who were married or living with a partner were less likely to have tried to quit during the study period. This finding is contrary to previous studies that found positive associations between smoking cessation behaviors and being married or living with a partner (Schwartz, 1991; Lichtenstein and Glasgow, 1992). Unfortunately, we are unable to explain the negative association in our data in that we found no significant interactions between marital status and either smoking status of spouse or partner, perceived desire by others for the smoker to quit or planning to quit within the next 3 months. Therefore, this association should be monitored in future studies to see if it is replicated.

Among those who had tried to quit in the past, self-efficacy was also important. This may have operated through performance accomplishments from prior quit attempts (Bandura et al., 1977). This is suggested by our finding that among smokers with past experience, those who perceived less effort was needed to quit were more likely to have made another attempt to quit (recycled) during the study period. Also, those who smoked fewer cigarettes per day were more likely to have made a quit attempt. While our data are not longitudinal, this may indicate that some recyclers have reduced the amount they smoke during prior quit attempts which in turn contributed to their perception that it will take relatively less effort to quit smoking in the future (Schoenborn and Boyd, 1989). To the extent that these interpretations are correct, recycling may be encouraged by helping smokers interpret previous quit attempts as positive learning experiences from which strategies can be developed for future attempts. Smokers who have tried to quit in the past should be encouraged to view previous attempts as evidence of their progress through the smoking cessation process (Marlatt et al., 1988).

Quitting smoking

Similar to our results for attempting to quit smoking, planning to quit in the next 3 months was the strongest correlate of quitting smoking during the study period among both groups of smokers. In addition, among both groups, smoking fewer cigarettes per day was associated with quitting.
These results support those of Marlatt and colleagues (1988) who also found that, as compared to never quitters (who had never quit for at least 24 h), quitters smoked fewer cigarettes per day.

Our finding that education was positively associated with quitting smoking among smokers with at least one previous quit attempt indicates a need to target interventions to less educated smokers (Pierce et al., 1989; Hatzianoudi et al., 1990). As for attempting to quit smoking, self-efficacy through performance accomplishment also appears to be important for quitting smoking among those who have tried to quit in the past. Among recyclers, smokers who perceived that less effort was needed to quit and those with more confidence in their ability to quit were more likely to have stopped during the study period. On the other hand, efficacy expectations were not significantly associated with quitting for those who had never tried to quit before. The apparent importance of performance accomplishment among recyclers is consistent with social learning theory that postulates that it is the strongest contributor to self-efficacy (Bandura et al., 1977). The absence of self-efficacy variables as correlates of quitting smoking among first-attempters is also logical inasmuch as they do not have prior experience in the smoking cessation process.

Conclusions

Results from these analyses have important implications for future research and practice. Our study dichotomized smokers into two groups based on previous smoking cessation behaviors. However, there were actually four potential groups among the general population of smokers. Those who did not attempt to quit smoking during our study comprised two groups: never-attempters and continuing relapsers. Never-attempters were those who had never tried to quit and who did not attempt to quit during the study, while continuing relapsers were those who had tried to quit in the past but did not make an attempt to quit during the study period. There also were two groups among those who attempted to quit smoking and thus entered the action stage during our study period: first-attempters and recyclers. First-attempters were smokers who had never tried to quit in the past and who made their first quit attempt during our study. Recyclers were smokers who had tried to quit in the past and attempted to quit again during the study period. More research is needed to better understand how to intervene most effectively with smokers in these four groups, especially among those who have not tried to quit previously.

In this analysis of correlates of quitting smoking, we focused on all smokers regardless of whether they attempted to quit during the 3 month study. If the analysis is replicated only among those who attempted to quit during the study period (n = 68 for never tried to quit before and n = 416 for tried to quit in the past), the results are comparable to Table III with two exceptions. Among both groups, planning to quit in the next 3 months was not significantly associated with quitting smoking. However, desire to quit was associated with quitting among those who made their first attempt during the study period. Therefore, even among only those smokers who made a quit attempt during the study, the correlates of quitting smoking differ among those who have and have not ever tried to quit.

We found that having made a previous quit attempt may be an important, easily identified characteristic that can be used for targeting individuals in smoking cessation interventions. However, using history of previous quit attempts, we classified only two groups of smokers because our data did not identify how long it had been since smokers tried to quit. Therefore, future research should examine whether it may be useful to consider more than these two subgroups of smokers, such as those who have never tried to quit, those who have tried but not within the recent past and those who have tried in the recent past (e.g. the past 12 months). It is important to determine if smokers with quit attempts in the distant past have characteristics and needs that are more similar to those who have never tried to quit, or to those who have tried to quit in the recent past. That is, it may be important to consider two types of recyclers: active recyclers who are in the preparation and action stages of change, and
inactive recyclers who have re-entered the precontemplation or contemplation stages.

This study shows that there are two important subgroups of smokers in the action stage of change, i.e. first-attempters and recyclers, who differ on important factors that should be addressed in smoking cessation interventions. While our findings agree with previous descriptions of the smoking cessation process, whereby on any attempt to quit, smokers in general need sufficient motivation and sense of self-efficacy, we also found that it may be important to employ appropriate intervention strategies according to whether a smoker has ever tried to quit.

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References


