

Original Investigation

Predictors of Quit Attempts and Abstinence Among Smokers Not Currently Interested in Quitting

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Abstract

Introduction: Rates of quitting smoking remain stagnant, and thus it is becoming increasingly important to identify determinants of successful quitting behavior. The primary purpose of the current study was to examine predictors of quit attempts and 7-day point prevalence abstinence in a large nationally based sample. The study population consisted exclusively of smokers with minimal interest in quitting in the immediate future, for whom the need to identify facilitating factors of cessation is highly significant.

Methods: Participants consisted of 849 smokers participating in a nationwide population-based randomized controlled trial (RCT) to promote quit attempts and cessation; all participants were not currently interested in cessation.

Results: After adjusting for treatment group, and using a multivariate logistic approach, a combination of motivational and self-efficacy variables consistently predicted quit attempts, regardless of how quit attempts were defined (i.e., any self-defined vs. 24 hr). Additionally, a greater number of previous quit attempts significantly predicted making future quit attempts. In terms of achieving short-term abstinence, regardless of whether analyses were restricted to individuals who made prior quit attempts or not, self-efficacy emerged as the only significant consistent predictor.

Conclusions: Unlike previous studies, we did not find strong evidence suggesting unique predictors for making a quit attempt compared with achieving abstinence. Our findings demonstrate that even among smokers not currently interested in quitting, self-efficacy and motivation are key factors in the cessation process. Overall, the findings have important implications, as they highlight factors to target for future treatment.

Introduction

Tobacco use is largely recognized as the leading cause of preventable death, incurring over 440,000 deaths annually within

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the United States alone. Several lines of evidence suggest that quitting has stalled. First, less than half (i.e., approximately 41%) of all smokers make a quit attempt annually, a rate that has not substantially changed in almost a decade (Centers for Disease Control and Prevention [CDC], 2011). Second, among those who make an attempt, a great majority eventually relapse (Fiore et al., 2008). Third, the quit ratio (proportion of ever smokers who have quit) has also not changed substantially (CDC, 2009). As a result, smoking prevalence rates have remained stagnant (23.1% in 2000 vs. 20.6% in 2009; CDC, 2009). One way to move beyond these obstacles is to acquire a better understanding of the quitting process.

Quitting smoking is often conceptualized as a series of stages (DiClemente et al., 1991; Prochaska, DiClemente, & Norcross, 1992) but chiefly requires first making a quit attempt and then succeeding in that quit attempt. Most, but not all, evidence suggests that different factors influence each of these two steps of the quitting process (Vangeli, Stapleton, Smit, Borland, & West, 2011). For example, smoking history and motivational variables have been more consistently linked with making a quit attempt. Specifically, duration (Hyland et al., 2006) and number of previous quit attempts (Borland, Owen, Hill, & Schofield, 1991; Hyland et al., 2006), intention and/or motivation to quit (Hyland et al., 2006; Zhou et al., 2009) have been more strongly associated with quit attempts than with cessation. In contrast, a recent review of the literature suggests that nicotine dependence is the single most consistent predictor of success following an attempt (Vangeli et al., 2011).

Most of the above studies were within restricted contexts, such as worksite smoking bans, and/or among select samples of smokers, that is, smokers in cessation trials who were motivated to quit. We are aware of no prior studies that examined predictors of making a quit attempt versus succeeding in a sample of smokers who are not currently interested in quitting. Most smokers are unable or unwilling to quit and have little interest and/or plans to quit in the immediate future (Augustson & Marcus, 2004; Jarvis, Wardle, Waller, & Owen, 2003; Wewers, Stillman, Hartman, & Shopland, 2003). This group of “recalcitrant” smokers is an important target population, since any significant change in quit rates will require a better understanding

of barriers/facilitators of abstinence within these individuals specifically. It is unclear if the obstacles to cessation for smokers not currently interested in quitting are any different than other groups of smokers. One rationale for this comes through the hardening hypothesis, which predicts that existing smokers have become increasingly intractable (Hughes, 2011). Thus, as smokers become increasingly difficult to treat, as might be the case for smokers not currently interested in quitting, predictors of quitting may change as well. Understanding what factors are associated with progressing toward cessation among this group of recalcitrant smokers is a critical step toward decreasing overall smoking prevalence.

The purpose of the current study was to build on the existing literature with a novel examination of the smoking cessation process among smokers not currently interested in quitting exclusively. An additional strength of the present study is the multiple definitions employed for each step toward quitting. Consistent with the Centers for Disease Control and Prevention definition of a quit attempt (CDC, 2009), several of the above studies examined factors predictive of quit attempts that lasted at least one day (i.e., 24-hr quit attempt). This could be problematic, since recent research suggests that a 24-hr requirement for quit attempts may bias outcomes by excluding more dependent smokers who cannot quit for 24 hr or more (Hughes & Callas, 2010). Therefore, the present study sought to address this by examining both any self-defined quit attempt and 24-hr quit attempts. Further, most of the former studies examined predictors of abstinence either (a) only among study participants who made a quit attempt or (b) among all study participants. The present study addresses both. The former answers the question “among those who try, who succeeds?” while the latter answers the question: “what are the predictors of attempting AND succeeding in a quit attempt?” These are separate but equally important questions. Together, we believe this novel focus and methodological approach could provide meaningful input toward efforts to further promote quitting.

Methods

Overview of Parent Study

Data from the current study are based on a large, nationwide population-based RCT of cessation induction (Carpenter, Alberg, Gray, & Saladin, 2010). Smokers who expressed some eventual, but not current, interest in quitting were randomly assigned to a 6-week phone-based intervention of either (a) practice quit attempts (PQA), versus (b) PQA + nicotine replacement therapy (NRT) sampling. Following the intervention period, all participants were provided with a brief prompt to quit smoking and were subsequently tracked for 6 months. The study demonstrated that the PQA + NRT intervention produced a significantly higher incidence of any quit attempt, 24-hr quit attempt, as well as a greater likelihood of achieving floating abstinence within the short-term; detailed information about the outcomes of the trial have been reported elsewhere (Carpenter et al., 2011).

Participant Eligibility and Recruitment

All participants in this study were recruited proactively through an online panel, managed by a national market research firm. Participants were eligible to participate in the study if they met

the following criteria: (a) age 18 or above; (b) current cigarette smoker of at least 10 cigarettes/day with no monthly cigar, pipe, smokeless tobacco use; (c) interested in quitting smoking at some time; (d) no US Food and Drug Administration-suggested cautions for NRT; (e) accessible by phone for a 6-month study period; (f) no previous use of NRT; and (g) without a quit attempt of greater than 1 week in the past year. Eligible participants were subsequently offered two study options, one for smokers wanting to quit in the next 30 days (cessation) and one for smokers not wanting to quit in the next 30 days (noncessation). Self-selection into either option served as a filter to exclusively focus on smokers not wanting to quit in the immediate future. Those opting for the cessation arm were enrolled in a separate short-term study and are not discussed further here. Those opting for the noncessation arm were invited to enroll in a clinical trial of cessation induction, described below, which became the basis for this present analysis.

Upon expressing interest in the noncessation study, eligible participants were mailed a study consent and baseline questionnaires. Participants were considered officially enrolled in the study only if they returned the signed consent and were contacted for an initial call; 849 participants represent the final study sample.

Procedure

We provide a brief description of the intervention components for background purposes only. Upon receipt of consent and baseline questionnaire, participants were randomized to one of the two intervention groups: (a) PQA—which served as a behavioral exercise in which participants were asked to practice quitting for a few hr/day without pressure of formally committing to quit for good. The purpose of this exercise was to assist participants with gaining further insight into process of quitting; (b) PQA + NRT (i.e., lozenge)—the hypothesized purpose of providing NRT within the context of a PQA was to increase readiness to quit, self-efficacy, and familiarization with evidence-based pharmacotherapy. At the conclusion of the intervention, all participants were provided with a brief prompt to quit smoking and were contacted by telephone at Week +4, Week +12, and Week +26 to ascertain study outcomes.

Measures

As part of a prospective trial, a number of assessments were collected at various points in the study. For brevity, only those assessments that are relevant to the current analysis are described here.

Primary Predictor Measures (Collected at Baseline)

Demographics. These included age, gender, marital status, education level, home smoking policy (e.g., whether live with other smokers, allow smoking in home).

Smoking history. With questions derived from National Health Interview Survey and Adult Tobacco Survey surveys, we determined number and duration of previous quit attempts, number of cigarettes smoked per day, years smoking.

Temptation and self-efficacy. Velicer’s Situational Temptation Measure (Velicer, DiClemente, Rossi, & Prochaska, 1990) was used to examine ability to resist temptations to smoke in various contexts (e.g., while stressed, socializing, or around other

smokers). With a sum of nine items, possible scores range from 9 to 45, with higher scores denoting greater urges or temptations to smoke in different contexts. In addition, we assessed confidence in quitting with a single-item 0–10 measure.

Social support. We included a five-item measure of partner support developed internally for use in smoking cessation interventions. Possible scores on this measure range from 5 to 25, with higher scores denoting greater levels of support.

Motivation to quit. Stage of change (SOC; Prochaska et al., 1992; Prochaska, Redding, & Evers, 2002) determined whether participants were in precontemplation (plan to quit but not in next 6 months), contemplation (plan to quit in next 6 months but not in the next 30 days), preparation (plan to quit in the next 30 days), or action (quit attempt in progress). Further, we utilized a modified version of the Contemplation Ladder (Biener & Abrams, 1991) to measure readiness to quit in both the next month and the next 6 months (0–10 for each).

Nicotine dependence. The Fagerström Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991) is a six-item scale measuring nicotine dependence, with scores ranging from 0 to 10.

Outcome Measures (Collected During Follow-up)

Quit attempts. We examined (a) any self-defined quit attempt and (b) any 24-hr quit attempt, each defined as occurring at any point during follow-up period.

Abstinence. Abstinence was defined as any period of 7-day no smoking (not even a puff) and thus reflects “floating abstinence” (Aveyard et al., 2009), rather than point prevalence. We believe this approach is better suited to understand predictors of abstinence within cessation induction trials, since participants may achieve abstinence at varying time points and doing so remains clinically meaningful. Abstinence was analyzed with two different denominators. First, we examine abstinence among participants who made a prior quit attempt (any self-defined). Second, we examine abstinence among the entire study sample. As noted earlier, this allows for examination of predictors of success among those who try versus predictors of trying and succeeding among all smokers. We did not biochemically verify abstinence because (a) participants were dispersed nationally and (b) prior reviews have suggested that it may be unnecessary in studies that involve minimal intensity treatment (Velicer, Prochaska, Rossi, & Snow, 1992).

Data Analysis

The predictor variables previously identified were assigned to three different clusters of variables: (a) social history, (b) psychological factors, and (c) smoking/quitting history variables (see Tables below). Thereafter, separate logistic regression models were run to identify predictors of the four main outcomes described above. All models controlled for treatment group.

Within each of the four outcomes, an initial regression model examined each predictor in isolation (though controlling for

Table 1. Unadjusted and Adjusted Odds Ratios, 95% CI, and *p* Value for Any Self-defined Quit Attempt (*N* = 849)^a

Variable	Model 1		Model 2		Model 3	
	OR (95% CI)	<i>p</i> Value	OR (95% CI)	<i>p</i> Value	OR (95% CI)	<i>p</i> Value
Social history						
Gender (referent: male)	1.13 (0.85–1.50)	0.41	–	–	–	–
Age	1.16 (1.02–1.31)	0.02	1.15 (1.00–1.31)	0.05	1.16 (1.01–1.33)	0.03
Race (referent: Caucasian)	0.78 (0.51–1.18)	0.24	–	–	–	–
Marital status (referent: in relationship)	0.76 (0.57–0.99)	0.05	0.75 (0.55–1.02)	0.07	–	–
Education	0.74 (0.61–0.88)	<0.01	0.70 (0.57–0.87)	<0.01	0.71 (0.58–0.87)	<0.01
Living situation (referent: do not live with smoker)	0.98 (0.74–1.28)	0.86	–	–	–	–
Home smoking policy	1.09 (0.94–1.27)	0.27	–	–	–	–
Psychological factors						
Stage of change	2.01 (1.69–2.39)	<0.01	1.03 (0.77–1.37)	0.86	–	–
Contemplation Ladder-6	1.26 (1.20–1.32)	<0.01	1.20 (1.11–1.30)	<0.01	1.21 (1.15–1.27)	<0.01
Temptation	1.01 (0.99–1.04)	0.34	–	–	–	–
Self-efficacy (single item)	1.15 (1.09–1.20)	<0.01	1.09 (1.04–1.15)	<0.01	1.09 (1.04–1.15)	<0.01
Partner support	1.07 (1.04–1.09)	<0.01	0.99 (0.97–1.03)	0.93	–	–
Smoking/quitting history						
FTND ^b	0.95 (0.90–1.01)	0.13	–	–	–	–
Number of cigarettes smoked per day	0.99 (0.97–1.00)	0.09	–	–	–	–
Number of prior quit attempts	1.24 (1.14–1.36)	<0.01	1.15 (1.04–1.27)	0.01	1.15 (1.04–1.27)	0.01
Duration longest quit attempts	1.05 (0.97–1.14)	0.23	–	–	–	–

Note. All significant *p* values are bolded.

^aControlling for intervention group.

^bFTND = Fagerström Test for Nicotine Dependence.

Predictors of quit attempts and abstinence

treatment group) to identify which was significantly associated with each outcome; that is, this model identified bivariate predictors for each outcome. A second regression model included previously identified significant variables from within each cluster; that is, this model identified the strongest predictor(s) within each cluster (social history, psychological factors, and smoking history). A third and final regression model included all previously identified significant variables across all clusters; that is, this model identified the strongest predictor(s) across all variables.

Given the potential for multicollinearity of predictors, we first ran correlational analyses to identify redundant variables within our models. These analyses showed that number of years smoking was highly correlated with current age ($r = .93, p < .001$); thus the former was dropped from further analyses. All other correlations were below .90, and thus, all remaining predictors were retained in each regression model. All analyses were conducted with version 17.0 of SPSS.

Results

Sample Characteristics

The sample consisted of 849 adult regular smokers (64% female). Mean age was 51 years ($SD = 11.6$), and the majority was Caucasian (87%). Approximately half (45%) of the participants were married, and most (76%) had obtained some college education. Participants were moderately dependent on tobacco (average FTND score = 4.9; $SD = 2.3$), currently smoked 20 cigarettes/

day (CPD; $SD = 8.97$), and had been smoking an average of 33 years ($SD = 11.9$).

Quit Attempts

Forty-four percent ($n = 376$) of participants reported making any self-defined quit attempt. As seen in Table 1, Model 1, after adjusting for intervention group alone, making a quit attempt was predicted by (a) social history: older age, being in a relationship, and lower level of education; (b) psychological factors: higher levels of motivation as measured by stage of change, greater readiness to quit in next 6 months, higher self-efficacy, and greater partner support; and (c) smoking/quitting history: higher number of prior quit attempts. Within Model 2, controlling for previously identified significant variables from within each cluster, making a quit attempt was predicted by (a) social history: older age and lower level of education; (b) psychological factors: greater readiness to quit in next 6 months and higher self-efficacy; and (c) smoking/quitting history: greater number of prior quit attempts (see Table 1, Model 2). Within Model 3, controlling for previously identified significant variables from across all clusters, these same variables were predictive of initiating a quit attempt (see Table 1, Model 3).

Thirty-nine percent ($n = 328$) of participants reported making a 24-hr quit attempt. As seen in Table 2, a number of variables from across the three different clusters significantly predicted making a 24-hr quit attempt when examined in isolation (i.e., Model 1). However, only select variables remained significant when entered into regression model in conjunction with

Table 2. Unadjusted and Adjusted Odds Ratios, 95% CI, and *p* Value for 24-hr Quit Attempt ($N = 849$)^a

Variable	Model 1		Model 2		Model 3	
	OR (95% CI)	<i>p</i> Value	OR (95% CI)	<i>p</i> Value	OR (95% CI)	<i>p</i> Value
Social history						
Gender (referent: male)	1.21 (0.91–1.61)	0.19	–	–	–	–
Age	1.14 (1.01–1.29)	0.04	1.13 (0.98–1.31)	0.10	–	–
Race (referent: Caucasian)	0.78 (0.51–1.18)	0.24	–	–	–	–
Marital status (referent: in relationship)	0.72 (0.54–0.95)	0.02	0.71 (0.52–0.97)	0.03	0.71 (0.52–0.96)	0.03
Education	0.83 (0.69–0.99)	0.05	0.78 (0.63–0.96)	0.02	0.81 (0.66–0.99)	0.04
Living situation (referent: do not live with smoker)	1.05 (0.79–1.38)	0.76	–	–	–	–
Home smoking policy	0.99 (0.86–1.17)	0.98	–	–	–	–
Psychological factors						
Stage of change	1.94 (1.63–2.32)	<0.01	1.05 (0.78–1.41)	0.77	–	–
Contemplation Ladder-6	1.24 (1.18–1.30)	<0.01	1.17 (1.07–1.26)	<0.01	1.19 (1.13–1.25)	<0.01
Temptation	1.02 (1.00–1.05)	0.05	1.01 (0.97–1.04)	0.71	–	–
Self-efficacy (single item)	1.17 (1.11–1.23)	<0.01	1.11 (1.05–1.17)	<0.01	1.12 (1.07–1.18)	<0.01
Partner support	1.07 (1.04–1.09)	<0.01	1.01 (0.98–1.05)	0.61	–	–
Smoking/quitting history						
FTND ^b	0.90 (0.85–0.96)	<0.01	0.92 (0.83–1.01)	0.07	–	–
Number of cigarettes smoked per day	0.98 (0.96–1.00)	0.01	1.00 (0.98–1.02)	0.79	–	–
Number of prior quit attempts	1.24 (1.14–1.36)	<0.01	1.14 (1.02–1.27)	0.02	1.14 (1.04–1.25)	0.01
Duration longest quit attempts	1.09 (1.01–1.19)	0.02	1.01 (0.91–1.12)	0.84	–	–

Note. All significant *p* values are bolded.

^aControlling for intervention group.

^bFTND = Fagerström Test for Nicotine Dependence.

other significant variables from within respective predictor cluster (i.e., Model 2) and across clusters (i.e., Model 3). Overall, the results suggest that being in a relationship, lower level of education, greater readiness to quit in next 6 months, higher self-efficacy, and greater number of prior quit attempts are strongly associated with making a 24-hr quit attempt.

Abstinence

We first examined predictors of abstinence exclusively among those who made a quit attempt (i.e., 145 abstainers/376 attempters). As seen in Table 3, Model 3, significant predictors across the three models were temptation and higher self-efficacy.

Next, we examined predictors of 7-day abstinence among the entire study sample (i.e., regardless of whether they reported a previous quit attempt). Seventeen percent ($n = 145$) of the sample reported achieving a period of 7-day abstinence at any point during the study period. As seen in Table 4, Model 3, the variables that remained consistently significantly predictive of 7-day abstinence included older age, lower level of education, readiness to quit in next 6 months, higher self-efficacy, and lower levels of nicotine dependence.

Discussion

Unlike existing studies, we examined predictors of quit attempts and 7-day point prevalence abstinence among a sample of smokers not currently interested in quitting exclusively, who constitute the majority of smokers (Wewers et al., 2003). In addition to

the sample, our study was unique in terms of its novel analytic approach, including the use of multiple definitions of quit attempts and multiple analyses to examine the separate steps of making quit attempts and succeeding in quitting, as well as the aggregate process of both. We examined (a) bivariate predictors of each outcome as well as (b) predictors within clusters of demographic, motivational, and smoking history and (c) predictors across these same clusters. Throughout this discussion, we focus on the latter, since this is the most clinically meaningful area of interpretation. In general, our broad findings are very much similar with other research among general populations of smokers (Vangeli et al., 2011). This suggests that the factors that promote cessation (both quit attempts and abstinence) among general populations of smokers are similar to those factors that promote cessation among smokers not currently interested in quitting.

Our findings confirm that, even among smokers not currently interested in quitting, self-efficacy and motivation are key factors in the cessation process. Among all examined variables, self-efficacy emerged as the only variable consistently linked with all outcomes examined in this study. Similarly, motivation was linked with making a quit attempt, regardless of how quit attempts were defined, as well as achieving 7-day abstinence, at least among the entire study sample. These findings are consistent with models of behavior change (Bandura, 1978), which highlight the influential role of self-efficacy and motivation in terms of providing the necessary impetus for promoting quitting. However, the fact that motivation was related to both making a quit attempt as well as success of a given attempt deviates from previous literature (Borland et al., 2010; West, McEwen, Bolling, &

Table 3. Unadjusted and Adjusted Odds Ratios, 95% CI, and *p* Value for 7-day Abstinence Among Prior Any Self-defined Quit Attempters ($N = 376$)^a

Variable	Model 1		Model 2		Model 3	
	OR (95% CI)	<i>p</i> Value	OR (95% CI)	<i>p</i> Value	OR (95% CI)	<i>p</i> Value
Social history						
Gender (referent: male)	1.01 (0.66–1.56)	0.95	–	–	–	–
Age	1.17 (0.97–1.42)	0.11	–	–	–	–
Race (referent: Caucasian)	0.84 (0.46–1.53)	0.57	–	–	–	–
Marital status (referent: in relationship)	0.96 (0.63–1.45)	0.83	–	–	–	–
Education	0.90 (0.68–1.19)	0.45	–	–	–	–
Living situation (referent: do not live with smoker)	0.76 (0.50–1.16)	0.21	–	–	–	–
Home smoking policy	0.87 (0.69–1.09)	0.24	–	–	–	–
Psychological factors						
Stage of change	1.11 (0.86–1.44)	0.42	–	–	–	–
Contemplation Ladder-6	1.05 (0.98–1.13)	0.19	–	–	–	–
Temptation	1.06 (1.02–1.10)	<0.01	1.04 (1.01–1.09)	0.03	1.05 (1.02–1.09)	<0.01
Self-efficacy (single item)	1.09 (1.02–1.18)	0.01	1.08 (1.01–1.16)	0.04	1.09 (1.01–1.17)	0.03
Partner support	1.04 (0.99–1.08)	0.10	–	–	–	–
Smoking/quitting history						
FTND ^b	0.89 (0.81–0.97)	0.01	0.94 (0.85–1.04)	0.20	–	–
Number of cigarettes smoked per day	0.98 (0.96–1.01)	0.19	–	–	–	–
Number of prior quit attempts	1.02 (0.91–1.14)	0.73	–	–	–	–
Duration longest quit attempts	1.12 (0.98–1.27)	0.08	–	–	–	–

Note. All significant *p* values are bolded.

^aControlling for intervention group.

^bFTND = Fagerström Test for Nicotine Dependence.

Table 4. Unadjusted and Adjusted Odds Ratios, 95% CI, and *p* Value for 7-day Abstinence (N = 849)^a

Variable	Model 1		Model 2		Model 3	
	OR (95% CI)	<i>p</i> Value	OR (95% CI)	<i>p</i> Value	OR (95% CI)	<i>p</i> Value
Social history						
Gender (referent: male)	1.07 (0.74–1.54)	0.74	–	–	–	–
Age	1.22 (1.03–1.44)	0.02	1.22 (1.02–1.47)	0.03	1.23 (1.03–1.47)	0.02
Race (referent: Caucasian)	0.76 (0.45–1.28)	0.30	–	–	–	–
Marital status (referent: in relationship)	0.82 (0.58–1.18)	0.29	–	–	–	–
Education	0.77 (0.61–0.98)	0.03	0.70 (0.54–0.92)	0.01	0.75 (0.58–0.97)	0.03
Living situation (referent: do not live with smoker)	0.80 (0.56–1.15)	0.24	–	–	–	–
Home smoking policy	0.94 (0.77–1.15)	0.54	–	–	–	–
Psychological factors						
Stage of change	1.70 (1.36–2.13)	<0.01	0.92 (0.64–1.34)	0.68	–	–
Contemplation Ladder-6	1.20 (1.13–1.28)	<0.01	1.15 (1.04–1.28)	0.01	1.15 (1.08–1.23)	<0.01
Temptation	1.05 (1.02–1.08)	<0.01	1.03 (0.99–1.07)	0.14	–	–
Self-efficacy (single item)	1.17 (1.09–1.23)	<0.01	1.11 (1.03–1.19)	<0.01	1.13 (1.06–1.21)	<0.01
Partner support	1.07 (1.03–1.11)	<0.01	1.02 (0.97–1.06)	0.49	–	–
Smoking/quitting history						
FTND ^b	0.88 (0.81–0.95)	<0.01	0.88 (0.82–0.96)	0.02	0.88 (0.81–0.96)	<0.01
Number of cigarettes smoked per day	0.98 (0.96–0.99)	0.04	0.96 (0.73–1.27)	0.79	–	–
Number of prior quit attempts	1.15 (1.05–1.27)	<0.01	1.13 (1.02–1.25)	<0.01	1.08 (1.00–1.16)	0.15
Duration longest quit attempts	1.12 (1.01–1.25)	0.03	1.05 (0.94–1.18)	0.39	–	–

Note. All significant *p* values are bolded.

^aControlling for intervention group.

^bFTND = Fagerström Test for Nicotine Dependence.

Owen, 2001; Zhou et al., 2009). Motivation has been consistently linked with initiating a quit attempt, but very few studies have found a positive predictive association between it and the success of the quit attempt.

Smoking history also plays an important role in the quitting process. Consistent with previous findings (West et al., 2001; Zhou et al., 2009), our results revealed that the number of prior quit attempts, but not the duration, predicted making future quit attempts. Thus, repeated attempts are more important than success of any one attempt. Clinically, it appears more important to tell smokers to keep trying and not dwell on previous failures, as this may indirectly impact their likelihood of eventually achieving abstinence. Lower nicotine dependence levels also predicted short-term abstinence. This conclusion is consistent with a recent review of the literature (Vangeli et al. 2011). Furthermore, while the literature has yielded mixed findings with regards to demographic variables, in the current study, we found that older age and lower education significantly predicted making a quit attempt and achieving 7-day point prevalence abstinence, which is consistent with other reports (Li et al., 2011).

Overall, the patterns of findings have important treatment implications. Both motivation and self-efficacy are amenable to change, as is the focus of motivational interventions. Two reviews of motivational interviewing have documented modest but significant treatment effects (Heckman, Egleston, & Hofmann, 2010; Lai, Cahill, Qin, & Tang, 2010), and this approach lends itself well to smokers not currently interested in quitting.

Similarly, the use of medication, particularly NRT, has been purported to increase self-efficacy, since it reduces withdrawal and craving (Molander, Lunell, & Fagerström, 2000; West & Shiffman, 2001), thus increasing one’s sense of control and confidence in their ability to initiate a quit attempt (Stanton, Lloyd-Richardson, Papandonatos, de Rios, & Niaura, 2009). Beyond motivational and pharmacological interventions, policy initiatives to promote quit attempts or trial abstinence also facilitate cessation. Both the Great American Smokeout and World No-Smoking Day are designed to encourage smokers to refrain from smoking for one day, perhaps as a PQA, to gain greater insight into the process of quitting and promote greater awareness of effective cessation strategies. Evaluations of these campaigns are limited, but some evidence supports their efficacy (Kotz, Stapleton, Owen, & West, 2011). Encouraging smokers to make repeated PQAs, particularly those who are currently not interested in quitting, may shift focus from the daunting challenge of trying to quit for good to the more realistic and confidence-building exercise of refraining from smoking for one day. Moreover, there is strong correlational evidence that increasing quit attempts increases the probability of eventual cessation (Farkas et al., 1996; Tobias, Cavana, & Bloomfield, 2010; West et al., 2001). For most smokers, repeated attempts are necessary before a smoker can successfully quit. That it will take several attempts is well accepted by smokers (Hymowitz et al., 1997; John, Meyer, Hapke, Rumpf, & Schumann, 2004). In fact, studies indicate that those who try to stop and fail are more motivated to try again compared with smokers who have not tried to quit (Joseph, Rice, An, Mohiuddin, & Lando, 2004).

Overall, unlike previous studies (Vangeli et al., 2011; West et al., 2001), we did not find strong evidence suggesting separate unique predictors for each of the two steps (i.e., making a quit attempt and 7-day point prevalence abstinence). While some variables were uniquely related to only one step in this process, others (i.e., self-efficacy and motivation) were equally related to both steps. The discrepancy in results may be attributable to the unique sample of smokers (i.e., smokers not currently interested in quitting) examined in our study compared with others, but this is unclear. Replication of the current findings as well as identification of novel predictors is needed. Future efforts should also take note of some of the limitations inherent in the current design, most notably reliance on self-report, the potential for recall bias regarding past quit history (Gilpin & Pierce, 1994), and lack of biochemical verification. Additionally, the homogenous sample (i.e., 87% were Caucasian) prevented us from examining whether cultural differences exist. Nonetheless, our study highlights important factors that prompt individuals to initiate a quit attempt as well as those that are related to the maintenance of that attempt. The identification of these factors has important implications as they can guide future public health initiatives aimed at increasing the occurrence of cessation behaviors among smokers not currently interested in quitting.

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Declaration of Interests

The authors do not declare any competing interests.

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