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Positive smoker identity as a barrier to quitting smoking: findings from a national survey of smokers in England

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Abstract

Background: It has been proposed that positive smoker identity may be an important factor undermining smoking cessation but very little research exists on this. This study tested the hypothesis that a simple measure of positive smoker identity would predict quit attempts over and above other known predictors in a population sample. More tentatively it explored whether this measure would also predict quit success.

Methods: A representative sample of adult smokers in England (n=9,456) was included at baseline and 2,099 were followed-up at six months. Demographic and smoking characteristics, a single item measure of positive smoker identity (endorsing the statement: 'I like being a smoker'), measures of smoking-related attitudes, quit attempts and quit success were included.

Results: A total of 18.3% (95% CI=17.5-19.2) of smokers reported a positive smoker identity. Adjusting for all other predictors, those with a positive smoker identity were more likely to be older ($p<0.001$), male ($p=0.013$), more nicotine dependent ($p<0.001$), have lower motivation to stop ($p<0.001$), have not made a quit attempt in the past year ($p=0.025$), enjoy smoking ($p<0.001$), and consider themselves to be addicted ($p<0.001$). Having a positive smoker identity independently predicted failure to make a quit attempt at six months ($p=0.007$). The independent association with quit success was similar in magnitude but did not reach statistical significance ($p=0.053$).

Conclusions: Only a minority of smokers in England have a positive smoker identity. However, where it is present it may be an important barrier to quitting smoking and merits further study.

Key words: smoking cessation, barriers, quit attempt, quit success, positive smoker identity, Smoking Toolkit Study

1. Introduction

Studies have consistently found that variables related to motivation to stop smoking (e.g. health concerns and enjoyment of smoking) are consistently predictive of quit attempts but less so of success of those attempts, whereas measures related to nicotine dependence (e.g. the Fagerstrom Test for Cigarette Dependence) are consistently predictive of quit success but less so of quit attempts (Vangeli et al., 2011). One important concept that so far has not been explored and which might have an impact on both quit attempts and success is what might be termed 'positive smoker identity'. If this construct is related to quit attempts and/or success, it may be an important target for messaging aimed at promoting smoking cessation. This paper aimed to address this gap.

There are many different ways of conceptualising identity and its role in behaviour (Schwartz et al., 2011) and there are different theories incorporating this construct to explain health behaviour (e.g. Identity Change Theory (Kearney and O'Sullivan, 2003)). The PRIME Theory of motivation (West, 2006), one of the few motivational theories that recognises the potentially pivotal role that identity can play in behaviour, provides the theoretical underpinning of this paper. It has been developed as an overarching model that can encompass models of reflective decision making as well as ones that focus on emotional and habitual drivers of behaviour (West, 2006). It defines identity as 'thoughts and images of ourselves and how we feel about these'. Thoughts are classified into 'labels' (the categories to which we consider that we belong, e.g. smoker), 'attributes' (the features we ascribe to ourselves, e.g. rebellious), and our 'personal rules' (the things that we do and do not do, e.g. not smoke indoors). Current identity and aspirational identity have positive and negative feelings attached to them that themselves can be a powerful source of wants and needs, which in turn are regarded as the primary drivers of purposeful behaviour (Oyserman and James, 2011; Vignoles, 2011; West, 2006).

Following the principle of parsimony, a positive smoker identity, one's positive feelings attached to the identity as a smoker, could be assessed by endorsement of the statement 'I like being a smoker'. For obvious reasons a positive smoker identity would be expected to deter smokers from trying to quit, but the strength of this relationship has not been evaluated. Neither is it known whether the prediction is over and above other key variables such as health concerns and enjoyment of smoking. It is possible that a smoker may enjoy smoking and not be concerned about the health consequences of smoking but have not integrated these attitudes into a sense of pleasure or satisfaction about being a smoker. Conversely, a smoker may not derive any pleasure or satisfaction from the act of smoking or the pharmacological effects of nicotine and may accept that smoking is damaging to the health but nevertheless gain pleasure or satisfaction from self-identifying as a smoker. Positive smoker identity may also predict quit success where other motivational variables do not. This is because of the intrinsic motivational force of identity and its persistence.

Little research has been published on smoker identity. The majority of findings relating to the role of smoker identity in cessation have been reported in studies based on qualitative methods. It has been shown that both adult (Vangeli and West, 2012) and young smokers (Johnson et al., 2003) report shifting between different smoker identities (e.g. from 'smoker' to 'non-smoker') during the process of cessation. There is also some evidence that smokers make efforts to distance themselves from their unwanted smoker identity (Brown et al., 2011; Hoek et al., 2013; Thompson et al., 2009), but often this identity transition is not sufficient to achieve long-term abstinence, and they can carry on smoking secretly (Thompson et al., 2009) or occasionally (Brown et al., 2011; Hoek et al., 2013). Similarly, it has been found that young smokers with a strong non-smoker identity are more likely to remain abstinent when compared with heavy smokers with an established smoker identity, even though they also report negative feelings about smoking and being a smoker (Johnson et al., 2003).

Quantitative studies suggest potential discrepancies between smoker identity and behaviour, that is, despite smoking cigarettes people deny being a smoker (Berg et al., 2009; Choi et al., 2010; Levinson et al., 2007; Ridner et al., 2010). Those denying their smoker identity tend to be younger, male (Berg et al., 2009), to smoke occasionally (Levinson et al., 2007) and to not have made a quit attempt in the past year (Berg et al., 2009). There is some evidence that having developed a smoker identity is associated with smoking escalation in adolescents (Hertel et al., 2012) and resistance to anti-tobacco messages (Falomir and Invernizzi, 1999; Freeman et al., 2001). Smokers with a smoker identity have been found in two studies of specific groups of smokers to be less likely to intend to (Falomir and Invernizzi, 1999) and make a quit attempt (van den Putte et al., 2009). Moreover, smoker self-concept and abstainer self-concept at baseline were reported to be important factors in predicting the success of smoking cessation treatments among adults (Shadel and Mermelstein, 1996).

Overall the literature on smoker identity suggests that positive smoker identity could play a role in both quit attempts and quit success, but the picture is not clear, and no study has examined this construct in a representative sample of smokers.

This study aimed to advance our understanding about determinants of smoking cessation by examining the role positive smoker identity plays in making quit attempts as well as in quit success prospectively. It addressed the following research questions:

1. What is the proportion of smokers in a nationally representative sample who report a positive smoker identity?
2. What socio-demographic, smoking variables and smoking-related attitudes are associated with positive smoker identity?

3. What is the predictive relationship between positive smoker identity for quit attempts and quit success at six months follow-up with and without adjustment for other predictors?

2. Methods

2.1. Study design

Data were collected as part of the Smoking Toolkit Study (STS) (http://www.smokinginengland.info). The STS is ongoing and comprises 1) a series of monthly household surveys monitoring national smoking and smoking cessation figures and related behaviour patterns in representative samples of adults in England, 2) postal follow up of each monthly wave six months later. The STS uses a random location sampling design with initial random selection of grouped output areas (containing 300 households), stratified by ACORN characteristics, an established geo-demographic analysis of the population (http://www.caci.co.uk/acorn/acornmap.asp), and region followed by face-to-face computer assisted interviews which were carried out each month by the Taylor Nelson Sofres-British Market Research Bureau with one adult member (age 16 and over) per each selected household. Follow-up questionnaires at six months after the baseline interview are sent to those agreeing to be re-contacted. Further methodological details are reported elsewhere (Fidler et al., 2011). The University College London ethics committee approved the Smoking Toolkit Study.

2.2. Participants

Measures used in the current study were included between June 2010 and March 2012, during which 43,079 adults aged 16 and over participated in the STS. A representative sample of current cigarette smokers who reported smoking cigarettes (including hand-rolled) either every day or occasionally, and provided data for all variables included in the analyses comprised the baseline sample (n=9,456). Of these 2,099 (22.2%) completed the 6-month follow-up questionnaire. The

follow up rate is typically low for this kind of household survey because it seeks to maximise representativeness of the baseline survey and so those taking part in the baseline survey do not necessarily have any interest in being followed up. Although the follow up rate was low, the sample followed up has been found to be similar on key variables to those not followed up (Beard et al., 2013; Fidler and West, 2010; Smit et al., 2011). Any bias leading to range restriction would lead to underestimate of predictive relationships.

2.3. Measures

Data on demographic characteristics, including gender, age and social-grade, were collected. In the analysis we used dichotomised social grade categories: Non Routine and Manual (AB=higher and intermediate professional/ managerial and C1=supervisory, clerical, junior managerial/ administrative/ professional) and Routine and Manual (C2=skilled manual workers, D=semi-skilled and unskilled manual workers and E=on state benefit, unemployed, lowest grade workers).

Attitudes to smoking were assessed with: 'How do you feel about being a smoker?', and participants stated whether they agreed ('Yes' or 'No') with the following statements: 'I like being a smoker', 'I enjoy smoking', 'I am addicted to smoking', 'I am confident I could stop if I tried', 'I am worried that smoking is harming my health right now', 'I am worried that smoking will harm my health in the future', 'I am worried about the effect of smoking on my family and loved ones' and 'Smoking is costing me too much money'. Participants could tick all that applied to them. According to our definition, positive smoker identity was assessed by the agreement with the statement 'I like being a smoker'.

Other smoking characteristics were assessed as follows. Nicotine dependence was measured with the established Heaviness of Smoking Index (HSI), a composite measure of the numbers of cigarettes smoked per day and time to first cigarette (Heatherton et al., 1989). Motivation to quit

was assessed with the validated single-item measure: the Motivation To Stop Scale (MTSS) which ranges from 1 'not want to' to 7 'really want to and intend to in the next month', with higher scores indicating higher level of motivation to stop (Kotz et al., 2013). Recent quit attempts were determined by asking participants 'Have you made a serious attempt to stop smoking in the past 12 months? By serious attempt I mean you decided that you would try to make sure you never smoked again. Please include any attempt that you are currently making' ('Yes' or 'No').

At six months follow-up, participants were asked whether they had made any serious attempt to stop in the past 12 months and those that answered yes were further asked: 'How long ago did your most recent serious quit attempt start' ('in the last week', 'more than a week and up to a month', 'more than 1 month and up to 2 months', 'more than 2 months and up to 3 months', 'more than 3 months and up to 6 months', 'more than 6 months and up to a year', 'can't remember') to assess whether any quit attempt had been made since baseline. A quit attempt was considered to be successful if a person had made a quit attempt during the follow-up period and answered 'No' to the question: 'Do you smoke cigarettes at all nowadays (including hand-rolled cigarettes)'. Only those reported having made a quit attempt since baseline were therefore included in the analysis of quit success.

2.4. Analysis

Prevalence of positive smoker identity was calculated by using weighted data to match the sample with the 2001 census on age, gender and social grade. Correlation coefficients were calculated to show the simple association between predictor variables in the logistic regressions. Pearson's χ^2 and t-tests were used to compare the baseline characteristics of those who completed and those who were lost to follow-up, and Pearson's χ^2 was used to assess the association between smoker identity and time since the quit attempt in the follow-up sample. A series of univariate logistic regressions were conducted to examine the association of having a positive smoker identity with demographic

and smoking characteristics as well as attitudes to smoking, and multivariate logistic regression analysis was used to evaluate the independent association of these characteristics with having a positive smoker identity. Similarly, the individual predictive relationship between positive smoker identity and quit attempts and quit success at six months follow-up was assessed by univariate logistic regression, and its predictive value for quit attempt and quit success independent from other predictors was evaluated by multivariate logistic regression. We aimed to explore potential determinants of smoking cessation; therefore, we did not test moderator effects.

3. Results

In the baseline sample (n=9,456), a total of 18.3% (95% CI=17.5-19.2) of adult smokers had a positive smoker identity, 19.4% (95% CI=18.3-20.6) of men and 17.1% (95% CI=16.0-18.3) of women. The prevalence of positive smoker identity ranged from 13.7% (95% CI=12.1-15.4) in the youngest (age 16-24) to 28.6% (95% CI=25.5-31.8) in the oldest age group (age 65 and over), and from 18.1% (95% CI=17.1-19.2) in Routine and Manual to 18.6% (95% CI=17.4-19.9) in Non Routine and Manual social groups.

To assess collinearity, correlation coefficients were calculated between all predictor variables in the logistic regressions (Table 1). There was no indication that multicollinearity would introduce bias in the multivariate logistic regression models, since predictor variables did not correlate highly with each other.

Cross-sectional logistic regression analyses showed that having a positive smoker identity was associated with being older and male (Table 2). In addition, those reporting stronger nicotine dependence, lower motivation to stop smoking and not having made a quit attempt in the past year were more likely to have a positive smoker identity. Enjoyment of and addiction to smoking, lower confidence in the ability to stop smoking, no current and future health concerns, no concerns about

the effects smoking has on family and the cost of smoking were also associated with a positive smoker identity. There was no evidence of a significant difference as a function of social grade. In the multivariate logistic regression, age, gender, nicotine dependence, motivation to stop smoking, previous quit attempts, enjoyment of and addiction to smoking remained significant predictors.

Table 3 shows the demographic and smoking characteristics of those lost to followed-up and those followed-up at six months. Those completing the 6-month questionnaire were more likely to be women, slightly older, enjoy smoking more and report addiction to smoking.

Table 4 reports logistic regression analyses assessing the predictive value of positive smoker identity for quit attempts and quit success in univariate analyses as well as in multivariate logistic regression independently from other demographic and smoking characteristics and smoking related attitudes. As regards barriers, those with a positive smoker identity and those who enjoy smoking more were less likely to have made an attempt to quit during the follow-up period of six months. Moreover, confidence in ability to stop smoking, future health concerns as well as worries about the effects of smoking on family were consistently found to be positive predictors of making a quit attempt. Although worrying about current health and cost of smoking were significant determinants in the univariate analysis, but these were no longer significant after adjusting for all other variables, while age was only significant in the fully adjusted model. In terms of predictors of quit success, positive smoker identity was not found to be significant and greater nicotine dependence predicted the failure to quit successfully at six months. In a sensitivity analysis, predictors of quit attempt and quit success were also both assessed in separate multivariate regression models with the forward entry method, and in each case the variables were found to be significant predictors. In addition, a sensitivity analysis was carried out with a more stringent measure of quit success: a quit attempt was considered successful if started within six months but no later than one month at six-month follow up; again, the pattern of results remained the same.

Finally, we examined the association between having a positive smoker identity and time since the most recent serious quit attempt started at the follow-up sample, but no significant difference was found as a function of positive smoker identity (Pearson's χ^2 =3.441; df=4; p=0.487).

4. Discussion

A minority of smokers had a positive smoker identity in a representative sample of adults, age 16 and over, in England. Having a positive smoker identity, as measured by agreement with the statement 'I like being a smoker', was associated with being older, male, reporting stronger nicotine dependence, lower motivation to stop smoking and not having made a quit attempt in the past year. Furthermore, those reporting enjoyment of and addiction to smoking were more likely to have a positive smoker identity, but there was no association with social grade. Positive smoker identity predicted failure to make a quit attempt by the six months follow-up above all other key predictors of quit attempts. Its association with quit success was similar in magnitude and was also in the negative direction, but failed to reach statistical significance. As expected, quit success was associated with lower nicotine dependence.

In line with previous work involving a somewhat different measure (Jarvis et al., 2002), we found evidence that the majority of smokers did not like being a smoker. While the reasons for this were not explored in this study, it is consistent with the hypothesis that with increasing social stigmatization and unacceptability of smoking, smokers become more likely to experience negative feelings about being a smoker (Ritchie et al., 2010; Thompson et al., 2009) and do not want to identify themselves with this self-label (Berg et al., 2009; Brown et al., 2011; Choi et al., 2010; Hoek et al., 2013; Levinson et al., 2007; Ridner et al., 2010; Thompson et al., 2009).

Characteristics of those with a positive smoker identity are consistent with some aspects of what has been called a 'hardcore smoker' - defined by having no history of abstinence in the past five years

and no attempt to quit in the past year as well as having no motivation and no intention to stop smoking in the future (Jarvis et al., 2003). However, as opposed to hardcore smoking (Jarvis et al., 2003), social grade was not associated with liking being a smoker in our study, which is in line with other findings from the literature (Fidler and West, 2009). A possible explanation for the association between age, nicotine dependence and a positive smoker identity is that older smokers might have a longer smoking history and established nicotine dependence; therefore, smoking becomes a firmly entrenched part of their identity. Alternatively, they might report positive feelings about being a smoker to reduce their cognitive dissonance between their attitudes and their smoking behaviour (Festinger, 1957).

We examined a set of factors prospectively that could potentially link with quit attempts and quit success. It is argued in PRIME Theory that having a smoker or a non-smoker identity plays an important role in maintaining or stopping smoking (West, 2006). In line with this and with previous studies of smoker identity (van den Putte et al., 2009) and self-perceived motivational factors for continuing smoking (Fidler and West, 2009), our analysis revealed that positive smoker identity was an important barrier to making a quit attempt in the future. Findings from our study are congruent with the literature (McEwen et al., 2008; Vangeli et al., 2011), as enjoyment of smoking, less confidence in the ability to stop smoking and no worries about future health were all found to be significant barriers to future attempts to stop smoking.

Although as opposed to previous findings (Shadel and Mermelstein, 1996) the relationship between smoker identity and quit success was not statistically significant in this study, the effects size was considerably large to merit further examination in the future in order to verify whether the lack of association reported here holds in different samples. Moreover, our findings provide further supporting evidence for lower nicotine dependence being a positive predictor of quit success (Diemert et al., 2013; John et al., 2004; McEwen et al., 2008; Vangeli et al., 2011). Results from the

current study suggest that positive smoker identity, as a motivational construct, might be more important for the first step in a cascade of steps of smoking cessation, before more physiological effects (i.e. nicotine dependence) take over to determine success.

Understanding the potential barriers to quit attempts is important since smokers generally try many times before stopping permanently (John et al., 2004); therefore, these findings could help to improve interventions and inform communication campaigns to promote smoking cessation. The complexity of identity calls for both qualitative and quantitative studies in the future to better understand its nature, components, operation and best practice for its measurement. Further research is needed to examine how, under which conditions and to what extent people internalize a smoker identity and in what way non-smoker and ex-smoker role models can promote identity change. The ultimate goal should be to find better ways to help smokers to undermine positive smoker identity and foster a negative smoker identity or a non-smoker identity, which in turn can contribute to achieve long-term abstinence (Lei Hum, 2013; Michie et al., 2011; Vangeli et al., 2010; West, 2009).

This study has several limitations. First, we used a single 'yes or no' question as an indication of whether a smoker had a positive smoker identity or not. Thus this measure will not capture the complexity and richness of this construct. However, to our best knowledge, there is no established and validated smoker identity measure available at the moment and despite this it was highly predictive of quitting. Secondly, there was a low follow-up rate at six months and the follow-up sample was not selected on the basis of representativeness for the general adult population in England. However, the differences between those followed-up and not followed-up in demographic and smoking characteristics were small in absolute terms with observed statistically significant differences primarily due to the large sample size. Finally, past quit attempts might be forgotten especially if they were unsuccessful or lasted for a shorter period of time or occurred longer ago

(Berg et al., 2010). However, there is no a priori reason to assume that the rate of forgetting should differ as a function of smoker identity.

To the best of our knowledge this study was the first to examine positive smoker identity and its role in quit attempts and quit success in a representative sample of adult smokers in any country. We found a low overall prevalence of a positive smoker identity, and our findings suggest that this identity aspect was as an important barrier to making a quit attempt.

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Table 1: Correlation coefficients between predictive variables in logistic regressions (N=9,456)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Positive smoker identity	1												
2. 'I enjoy smoking'	0.18*	1											
3. 'I am addicted to smoking'	0.06*	-0.01	1										
4. Heaviness of Smoking Index	0.09*	0.07*	0.24*	1									
5. 'I am confident I could stop if I tried'	-0.07*	-0.18*	-0.18*	-0.19*	1								
6. 'I am worried that smoking is harming my health right now'	-0.04*	-0.02*	0.23*	0.12	0.11*	1							
7. 'I am worried that smoking will harm my health in the future'	-0.06*	-0.01	0.20*	-0.03*	0.14*	0.34*	1						
8. 'I am worried about the effect of smoking on family and loved ones'	-0.04*	-0.05*	0.19*	0.02	0.11*	0.32*	0.29*	1					
9. 'Smoking is costing me too much money'	-0.03*	0.001	0.19*	0.09*	0.07*	0.18*	0.15*	0.16*	1				
10. Motivation to Stop Scale	-0.27*	-0.31*	0.11*	-0.08*	0.23*	0.29*	0.29*	0.25*	0.18*	1			
11. Quit attempt in past year	-0.13*	-0.14*	0.08*	0.01	0.06*	0.16*	0.14*	0.14*	0.09*	0.39*	1		

12. Age	0.12*	0.16*	0.02*	0.08*	-0.10*	0.03*	-0.05*	-0.07*	-0.05*	-0.15*	-0.01*	1	
13. Gender	-0.03*	-0.01	0.02*	-0.05*	-0.01	0.04*	0.01	0.07*	0.06*	0.04*	0.04*	0.03*	1
14. Social Grade	-0.001	-0.05*	-0.01	0.15*	-0.01	-0.02*	-0.06*	-0.001	0.02*	-0.01	0.01	0.02	0.02

*p<0.05; Note: where one of the variables is dichotomous the correlations are point-biserial and where both are they are tetrachoric.

Table 2: Associations between demographic, smoking and smoking related self-described characteristics and positive smoker identity in the baseline sample

	Baseline sample (n=9,456)	No positive smoker identity (n=7,710)	Positive smoker identity (n=1,746)	Positive smoker identity vs. No positive smoker identity	
				OR (95% CI); p-value	Adj. OR[a] (95% CI); p-value
Women, % (n)	49.4 (4,674)	50.2 (3,874)	45.8 (800)	0.84 (0.76-0.93); p=0.001	0.87 (0.77-0.97); p=0.013
Age, Mean (SD), (increase in 10 years of age)	42.4 (16.8)	41.4 (16.5)	46.6 (17.6)	1.20 (1.16-1.24); p<0.001	1.11 (1.07-1.15); p<0.001
Routine and manual, % (n)	69.3 (6,554)	69.3 (5,345)	69.2 (1,209)	1.00 (0.89-1.12); p=0.947	0.97 (0.86-1.09); p=0.610
Heaviness of Smoking Index, Mean (SD), (per point increase)	2.1 (1.5)	2.0 (1.5)	2.4 (1.5)	1.17 (1.13-1.21); p<0.001	1.09 (1.04-1.13); p<0.001
Motivation to Stop Scale, Mean (SD), (per point increase)	3.8 (2.0)	4.1 (2.0)	2.6 (1.9)	0.69 (0.67-0.71); p<0.001	0.71 (0.68-0.73); p<0.001
Quit attempt in past year, % (n)	31.7 (2,999)	34.5 (2,658)	19.5 (341)	0.46 (0.41-0.52); p<0.001	0.85 (0.74-0.98); p=0.025
'I enjoy smoking', % (n)	43.9 (4,147)	39.6 (3,056)	62.5 (1,091)	2.54 (2.28-2.82); p<0.001	1.65 (1.47-1.86); p<0.001
'I am addicted to smoking', % (n)	36.0 (3,401)	34.6 (2,669)	41.9 (732)	1.36 (1.23-1.52); p<0.001	1.58 (1.39-1.79); p<0.001
'I am confident I could stop if I tried', % (n)	27.8 (2,628)	29.4 (2,265)	20.8 (363)	0.63 (0.56-0.72); p<0.001	1.15 (1.00-1.32); p=0.054
'I am worried that smoking is harming my health right now', % (n)	26.3 (2,483)	27.2 (2,096)	22.2 (387)	0.76 (0.67-0.86); p<0.001	1.09 (0.93-1.27); p=0.284

'I am worried that smoking is harming my health in the future', % (n)	33.0 (3,123)	34.3 (2,647)	27.3 (476)	0.72 (0.64-0.81); p<0.001	1.00 (0.87-1.15); p=0.988
'I am worried about the effect of smoking on family and loved ones', % (n)	23.5 (2,222)	24.3 (1,871)	20.1 (351)	0.79 (0.69-0.89); p<0.001	1.12 (0.97-1.31); p=0.134
'Smoking is costing me too much money', % (n)	44.0 (4,156)	44.6 (3,437)	41.2 (719)	0.87 (0.78-0.97); p=0.010	1.04 (0.93-1.17); p=0.509

[a] Adjusted for all other variables.

Table 3: Demographic and smoking characteristics of those lost to follow-up and followed-up at six months

	Lost to followed-up (n=7,357)	Followed-up at six months (n=2,099)
Women, % (n)	47.8 (3,518)	55.1 (1,156)*
Age, Mean (SD)	41.0 (16.9)	47.0 (15.8)*
Routine and manual, % (n)	69.1 (5,087)	69.9 (1,467)
Heaviness of Smoking Index, Mean (SD)	2.0 (1.5)	2.2 (1.5)*
Motivation to Stop Scale, Mean (SD)	3.8 (2.0)	3.7 (2.0)
Quit attempt in past year, % (n)	32.1 (2,359)	30.5 (640)
'I enjoy smoking', % (n)	42.6 (3,136)	48.2 (1,011)*
'I am addicted to smoking', % (n)	34.4 (2,534)	41.3 (867)*
'I am confident I could stop if I tried', % (n)	28.4 (2,091)	25.6 (537)*
Positive smoker identity, % (n)	18.0 (1,323)	20.2 (423)*
'I am worried that smoking is harming my health right now', % (n)	25.8 (1,897)	27.9 (586)*
'I am worried that smoking will harm my health in the future', % (n)	32.6 (2.395)	34.7 (728)
'I am worried about the effect of smoking on family and loved ones', % (n)	23.0 (1,690)	25.3 (532)*
'Smoking is costing me too much money', % (n)	43.2 (3,179)	46.5 (977)*

*Significant difference between samples ($p<0.05$)

Table 4: Regression analysis with predictors of quit attempts in the followed-up sample at six months (n=2,099) and quit success in the sample of those who have made a quit attempt during the follow-up period of six months (n=638)

	Follow-up at six months			
	Quit attempt (n=2,099)		Quit success (n=638)	
	OR (95% CI); p-value	Adj. OR[a] (95% CI); p-value	OR (95% CI); p-value	Adj. OR[a] (95% CI); p-value
Positive smoker identity	0.61 (0.48-0.79); p<0.001	0.69 (0.53-0.91); p=0.007	0.58 (0.32-1.06); p=0.077	0.54 (0.29-1.01); p=0.053
'I enjoy smoking'	0.66 (0.55-0.80); p<0.001	0.71 (0.58-0.87); p=0.001	0.95 (0.65-1.40); p=0.805	1.03 (0.68-1.55); p=0.904
'I am addicted to smoking'	1.14 (0.95-1.38); p=0.163	1.14 (0.92-1.41); p=0.245	0.97 (0.67-1.43); p=0.892	1.26 (0.82-1.96); p=0.295
Heaviness of Smoking Index (per point increase)	0.94 (0.89-1.00); p=0.058	0.97 (0.90-1.03); p=0.300	0.83 (0.73-0.94); p=0.003	0.82 (0.72-0.94); p=0.004
'I am confident I could stop if I tried'	1.70 (1.39-2.09); p<0.001	1.53 (1.22-1.92); p<0.001	0.96 (0.64-1.43); p=0.822	0.90 (0.57-1.41); p=0.637
'I am worried that smoking is harming my health right now'	1.61 (1.32-1.97); p<0.001	1.19 (0.94-1.51); p=0.143	0.86 (0.57-1.28); p=0.458	0.91 (0.56-1.47); p=0.691
'I am worried that smoking will harm my health in the future'	1.58 (1.30-1.91); p<0.001	1.28 (1.02-1.60); p=0.031	0.84 (0.57-1.24); p=0.375	0.79 (0.51-1.24); p=0.305
'I am worried about the effect of smoking on family and loved ones'	1.70 (1.38-2.09); p<0.001	1.41 (1.12-1.77); p=0.004	1.01 (0.68-1.52); p=0.945	1.16 (0.74-1.80); p=0.518

'Smoking is costing me too much money'	1.22 (1.01-1.47); p=0.036	1.07 (0.88-1.31); p=0.490	0.88 (0.60-1.28); p=0.500	0.97 (0.64-1.45); p=0.871
Age (increase in 10 years of age)	1.04 (0.98-1.11); p=0.191	1.10 (1.03-1.17); p=0.005	0.94 (0.83-1.06); p=0.323	0.96 (0.84-1.09); p=0.496
Gender (ref. Men)	0.95 (0.79-1.15); p=0.608	0.89 (0.74-1.08); p=0.251	0.92 (0.63-1.34); p=0.657	0.88 (0.60-1.30); p=0.524
Social Grade (ref. Non Routine and Manual)	0.98 (0.80-1.20); p=0.844	0.98 (0.80-1.21); p=0.853	0.67 (0.45-1.00); p=0.051	0.73 (0.48-1.10); p=0.132

[a] Adjusted for all other variables.