

# Research

## “Catastrophic” pathways to smoking cessation: findings from national survey

Robert West, Taj Sohal

### Abstract

**Objective** To assess the extent to which the prevailing model of smoking cessation (that smokers typically prepare their attempts to stop smoking in advance and that doing so increases their chances of success) is correct.

**Design** Cross sectional household survey.

**Setting** England.

**Participants** 918 smokers who reported having made at least one quit attempt and 996 ex-smokers aged 16 and over.

**Main outcome measures** Whether the most recent quit attempt was planned in advance and whether quit attempts made at least six months before resulted in at least six months' abstinence.

**Results** 48.6% of smokers reported that their most recent quit attempt was put into effect immediately the decision to quit was made. Unplanned quit attempts were more likely to succeed for at least six months: among respondents who had made a quit attempt between six months and five years previously the odds of success were 2.6 times higher (95% confidence interval 1.9 to 3.6) in unplanned attempts than in planned attempts; in quit attempts made 6-12 months previously the corresponding figure was 2.5 (1.4 to 4.7). The differences remained after controlling for age, sex, and socioeconomic group.

**Conclusions** A model of the process of change based on “catastrophe theory” is proposed, in which smokers have varying levels of motivational “tension” to stop and then “triggers” in the environment result in a switch in motivational state. If that switch involves immediate renunciation of cigarettes, this can signal a more complete transformation than if it involves a plan to quit at some future point.

### Introduction

Approximately one third of smokers in Britain make at least one attempt to stop smoking in a given year.<sup>1</sup> Success in stopping smoking yields an increase in life expectancy of up to 10 years.<sup>2</sup> The prevailing model of the process of stopping smoking postulates a series of “stages” from thinking about quitting to planning and then subsequently making a quit attempt.<sup>3</sup> This model has been criticised on many grounds, including arbitrariness of stage definitions and poor performance in predicting cessation compared with other approaches.<sup>4</sup> The stage based model is also at odds with reports of many ex-smokers who say that they just decided to stop one day and did. A Canadian general practitioner recently reported that more than half of the smokers and ex-smokers she interviewed who had made attempts to stop smoking had done so without any preplanning.<sup>5</sup> Surprisingly, smokers who made unplanned quit attempts were more likely

still not to be smoking at the time of the interview than those who planned their attempts in advance. We investigated this in a national sample of smokers in England and included several additional measures designed to rule out important potential sources of bias and confounding.

### Methods

Three consecutive household omnibus surveys carried out by the British Market Research Bureau (BMRB) in spring 2005 included questions on smoking. The BMRB omnibus uses computer assisted face to face interviews and a multistage quota sample designed to maximise representativeness within the age range 16 and over. In the first stage, grouped output areas (containing 300 households) have an equal chance of being selected. The interviewers then go to the selected areas and attempt to secure interviews with members of households—one member per household, according to quotas based on known percentages for age, sex, social grade, region, working status, and presence of children in the population.

A total of 5351 respondents were interviewed. Demographic information and smoking status were assessed by using standard questions based on those used in other national surveys.<sup>1</sup> The profile of the sample was similar to that found in those other surveys, with a slight excess of women (56%), 50% aged under 45, and 66% in socioeconomic groups C1, C2, and D according to the census classification system. The prevalence of cigarette smoking was 27%. To arrive at national prevalence estimates, data from the BMRB omnibus surveys are normally weighted by age, sex, and socioeconomic group. We applied these weights and arrived at a figure for smoking prevalence of 25%, which is the same as that found for England in the general household survey in 2003/4.<sup>6</sup> Current smokers were asked: “How many cigarettes per day do you usually smoke, or if you don't smoke daily how many do you usually smoke per week?” The unweighted average was 14 a day, the same as found in the general household survey<sup>6</sup>; the weighted average was similar at 13.5. Our key findings were similar whether or not we used weighted data. We present findings from unweighted data to simplify interpretation of the statistical analyses.

Respondents who had ever smoked were asked: “Have you ever made a serious attempt to stop smoking? By serious attempt I mean you decided that you would try to make sure you never smoked another cigarette?” A total of 918 smokers reported a serious quit attempt, and a further 996 respondents reported that they were ex-smokers. We asked: “Thinking back to your most recent attempt to give up smoking, how long ago was it?” A “don't know” response option was included. Smokers who had made a quit attempt and ex-smokers were asked: “Which of these

**Table 1** Percentages (numbers) of quit attempts that were planned, analysed by age, sex, and socioeconomic status

	Sex		Socioeconomic group*			Age (years)†			Total (n=1914)
	Male (n=900)	Female (n=1014)	AB (n=268)	C1/C2 (n=955)	DE (n=691)	16-34 (n=502)	35-54 (n=662)	≥55 (n=750)	
Unplanned	50.0 (450)	47.3 (480)	52.6 (141)	50.5 (482)	44.4 (307)	47.8 (240)	42.1 (279)	54.8 (411)	48.6 (930)
Planned for later the same day	5.8 (52)	5.9 (60)	1.5 (4)	5.1 (49)	8.5 (59)	6.2 (31)	5.7 (38)	5.7 (43)	5.9 (112)
Planned for the next day	4.2 (38)	7.1 (72)	4.5 (12)	5.0 (48)	7.2 (50)	9.2 (46)	5.0 (33)	4.1 (31)	5.7 (110)
Planned a few days ahead	11.9 (107)	13.3 (135)	13.8 (37)	12.9 (123)	11.9 (82)	12.9 (65)	16.9 (112)	8.7 (65)	12.6 (242)
Planned a few weeks ahead	14.2 (128)	14.3 (145)	16.8 (45)	14.2 (136)	13.3 (92)	14.7 (74)	19.0 (126)	9.7 (73)	14.3 (273)
Planned a few months ahead	6.1 (55)	5.1 (52)	3.7 (10)	6.1 (58)	5.6 (39)	6.4 (32)	6.3 (42)	4.4 (33)	5.6 (107)
Other	7.0 (63)	6.3 (64)	5.6 (15)	5.5 (53)	8.5 (59)	2.6 (13)	4.7 (31)	11.1 (83)	6.6 (127)
Cannot remember	0.8 (7)	0.6 (6)	1.5 (4)	0.6 (6)	0.4 (3)	0.2 (1)	0.2 (1)	1.5 (11)	0.7 (13)

\*Significant difference in percentage planning ahead in different social grades by  $\chi^2$  test, P<0.001.  
 †Significant difference in percentage planning ahead in different age groups by  $\chi^2$  test, P<0.001.

statements best describes how your most recent quit attempt started? (all response options were displayed): (1) I did not plan the quit attempt in advance; I just did it; (2) I planned the quit attempt for later the same day; (3) I planned the quit attempt the day beforehand; (4) I planned the quit attempt a few days beforehand; (5) I planned the quit attempt a few weeks beforehand; (6) I planned the quit attempt a few months beforehand; (7) Other; (8) Cannot remember.” We also asked them: “How long did your most recent quit attempt last?”, and the response options included “Don’t know” and “Still not smoking.”

**Results**

The results indicate that almost half of the attempts to stop smoking were made without previous planning (table 1). Respondents in social groups D and E were slightly less likely to make unplanned attempts, and those aged over 55 were more likely to do so. More strikingly, the attempts that were unplanned succeeded for longer. Table 2 presents the percentage of planned and unplanned quit attempts, made at least six months previously, that succeeded for at least six months. It restricts analyses to quit attempts made up to five years previously, because recollection of the duration of quit attempts made before then might be subject to bias (although the pattern of results is the same when those early quit attempts are included). Among the 611 quit attempts made between six months and five years previously, 65.4% of unplanned attempts lasted at least six months compared with 42.3% of planned attempts (odds ratio 2.6, 95% confidence interval 1.9 to 3.6).

After multiple logistic regression to adjust for age, sex, and socioeconomic group, the odds of succeeding for at least six months remained higher for unplanned attempts than planned attempts (odds ratio 2.0, 1.2 to 3.2). Table 2 shows the same pattern for other subcategories of respondent. Thus in respondents who made an attempt to stop smoking between six and 12 months previously, the odds of succeeding for at least six months were higher for unplanned attempts than for planned ones (odds ratio 2.5, 1.4 to 4.7). Adjusting for age, sex, and socioeconomic group did not affect the results (odds ratio 2.4,

1.3 to 4.6). To check that this result was not due to a kind of self serving bias in which smokers who had successfully stopped at the time of the survey reported that they had quit without previous preparation, we also looked at current smokers only (table 2). Again, unplanned quit attempts were more likely than planned ones to have succeeded for at least six months (odds ratio 2.3, 1.5 to 3.7). In this group, after adjustment for current cigarette consumption as well as age, sex, and socioeconomic group, unplanned quit attempts remained more likely to be successful (odds ratio 2.0, 1.2 to 3.2).

**Discussion**

The results show that a substantial proportion of attempts to stop smoking are made without any previous planning and, surprisingly, that unplanned quit attempts have a greater chance of succeeding. These findings do not necessarily imply that planning quit attempts is counterproductive, and use of behavioural support and nicotine replacement therapy are known to improve the chances of success even though they generally require planning ahead.<sup>7</sup> More likely, whether a quit attempt is planned or unplanned reveals something about the state of mind of the smoker at the time, which has importance for whether the attempt will last.

We hypothesise an alternative model to the stages of change approach, one that is based on “catastrophe theory.”<sup>8</sup> Catastrophe theory is a branch of mathematics that deals with the way in which tensions develop in systems so that even small triggers can lead to sudden “catastrophic” changes. We propose that beliefs, past experiences, and the current situation create varying levels of “motivational tension,” in the presence of which even quite small “triggers” can lead to a renunciation of smoking; where they lead instead to a “plan” for later action, this may signify a lower level of commitment in a proportion of smokers. This concept has been incorporated in a general theory of motivation and its application to addictive behaviours.<sup>9</sup> Public health campaigns should perhaps focus on what might be called the “3 Ts”: creating motivational tension, triggering action in smokers who are on the “cusp” of a change in their orientation to smok-

**Table 2** Success rates of planned and unplanned quit attempts

	Smokers and ex-smokers: 6 months to 5 years before* (n=611)		Smokers and ex-smokers: 6-12 months before* (n=191)		Current smokers: 6 months to 5 years before* (n=391)	
	Lasted ≥6 months†	Total % (No)	Lasted ≥6 months†	Total % (No)	Lasted ≥6 months†	Total % (No)
Unplanned	65.4 (59.8 to 70.1)	45.8 (280)	50.0 (37.6 to 62.4)	35.6 (68)	38.1 (30.4 to 45.7)	39.6 (155)
Planned	42.3 (37.0 to 47.6)	54.2 (331)	28.5 (20.5 to 36.4)	64.4 (123)	20.6 (15.6 to 25.9)	60.4 (236)

\*Most recent attempt to stop smoking.  
 †Percentage (95% confidence interval).

### What is already known on this topic

The process of stopping smoking is thought to involve a series of “stages,” going from thinking about stopping, through planning an attempt, to actually making the attempt

Such planning is widely thought to be important for success

### What this study adds

Almost half of smokers’ most recent attempts to stop involved no previous planning, and unplanned quit attempts were more likely than planned ones to be successful

ing, and immediate availability of treatment such as nicotine patches and counselling to support those attempts, including attempts that were started before help was sought.

Contributors: RW devised the study, did the statistical analyses, and drafted the manuscript. TS coordinated implementation of the study, assisted with the analysis, and contributed to the drafting of the manuscript. RW is the guarantor.

Funding: Cancer Research UK.

Competing interests: RW has done paid research and consultancy for, and received hospitality from, manufacturers of smoking cessation drugs. He has also written a book on the theory described in the paper.

Ethical approval: Ethical approval was granted by the UCL Ethics Committee.

- 1 Lader D, Goddard E. *Smoking related attitudes and behaviour, 2004*. London: Office of National Statistics, 2005.
- 2 Doll R, Peto R, Boreham J, Sutherland I. Mortality in relation to smoking: 50 years’ observations on male British doctors. *BMJ* 2004;328:1519.
- 3 Prochaska JO, Velicer WF. The transtheoretical model of health behavior change. *Am J Health Promot* 1997;12:38-48.
- 4 West R. Time for a change: putting the transtheoretical (stages of change) model to rest. *Addiction* 2005;100:1036-9.
- 5 Larabie L. To what extent do smokers plan quit attempts? *Tob Control* (in press).
- 6 Office of National Statistics. *General household survey 2003*. London: National Statistics, 2005.
- 7 National Institute for Clinical Excellence. *Nicotine replacement therapy (NRT) and bupropion for smoking cessation*. London: NICE, 2002. (Technology appraisal guidance No 38.)
- 8 Brown C. *Chaos and catastrophe theories: quantitative applications in the social sciences*. London: Sage, 1995.
- 9 West R. *Theory of addiction*. Oxford: Blackwells, 2006.

(Accepted 18 November 2005)

doi 10.1136/bmj.38723.573866.AE

University College London, London WC1E 6BT  
Robert West *professor of health psychology*

BMRB Social Research, 26-30 Uxbridge Road, London W5 2BP  
Taj Sohal *senior research executive*

Correspondence to: R West robert.west@ucl.ac.uk