



Conflict About Quitting Predicts the Decision to Stop Smoking Gradually or Abruptly: Evidence From Stop Smoking Clinics in Malaysia

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Background: Little is known about the extent to which smokers attending stop-smoking clinics experience conflicting motivations about their quit attempt, whether such conflict can be understood in terms of a single dimension and if this 'conflict about quitting' differs from motivation to stop smoking and is associated with a smoker's choice of method to stop smoking (stopping gradually or abruptly). **Method:** Sociodemographic, smoking and quit attempt characteristics as well as measures relating to conflict about stopping smoking were recorded in a cross-sectional survey of 198 smokers attending five quit smoking clinics in Malaysia. **Results:** Five measures (having seriously thought about quitting before, being happy about becoming a non-smoker, being strongly motivated to stop, intending to stop smoking completely and believing in stopping for good this time) were loaded onto a single factor that could be labelled 'conflict about quitting'. The resultant scale had moderate internal reliability (Cronbach's $\alpha = .625$). Most smokers exhibited conflicting motivations about stopping smoking, with over half (52.0%, 95% CI 45.1–59.1) scoring 2 or higher on the 5-point conflict scale. 'Conflict about quitting' was significantly associated with the decision to stop smoking gradually rather than abruptly controlling for other variables (*OR* 1.36, 95% CI 1.05–1.76) and was more strongly associated with the choice of smoking cessation method than motivation to stop smoking. **Conclusions:** 'Conflict about quitting' can be conceptualised as a single dimension and is prevalent among smokers voluntarily attending stop-smoking clinics. The finding that smokers who display greater conflict about quitting are more likely to choose gradual cessation may explain contradictory findings in the literature regarding the effectiveness of different methods of smoking cessation.

Keywords: conflict, motivation, Malaysia, abrupt cessation, gradual cessation, smoking cessation clinics

The research reported in this article aimed to investigate whether smokers attending behavioural support programs for smoking cessation experience conflicting motivations about stopping. Extant research, carried out in English smoking cessation clinics, suggests that many clients experience conflict prior to their quit attempts but conflict itself has not been examined to our knowledge. Smokers may be concerned about losing the enjoyment of smoking and the functions it provides,

particularly stress relief (McEwen, West, & McRobbie, 2008). It is also apparent from clinical studies that smokers about to stop vary in their self-reported level of motivation (West, 2004, 2009). It is not clear how far such motivational dispositions can be understood in terms of a single dimension of 'conflict about quitting' that would also include feelings of unhappiness about becoming a nonsmoker, enjoyment of smoking and worrying about missing smoking. In this context, it is

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important to emphasise that such motivational conflict is conceptually related to, but distinct from, motivation per se; that is, while smokers who attend smoking cessation clinics are presumably motivated to stop smoking, they may nonetheless be conflicted to the extent that they experience strong opposing motivations that may undermine their quit attempt. By contrast, individuals who have low motivation may not necessarily experience conflict but will fail to stop smoking owing to insufficient drive to engage with a quit attempt (West, 2006). Therefore, this study first examined whether a single dimension of conflict about quitting, over and above motivation to stop smoking, could be constructed from smokers' self-reports.

An obvious next question is the prevalence of conflict in clinical samples. This is likely to vary from program to program and country to country given diverse cross-cultural differences in attitudes towards tobacco use (Shafey, Eriksen, Ross, & Mackay, 2009). This study aimed to address this issue with a sample of smokers attending support programs in Malaysia. Studies in other countries will be needed to determine how much variation exists and, if so, what underlies this variation.

Another important research question concerns how far conflict about quitting varies with other smoker's characteristics such as nicotine dependence, past history of smoking and quitting and sociodemographic factors. Answering this question may help to determine what underlies such conflict. For example, smokers with higher levels of nicotine dependence or who have previous experiences of quit attempts that quickly failed may be more conflicted because of lower confidence in their ability to stop.

A last question addressed in this article is concerned with the extent to which 'conflict about quitting' might account for the way that smokers approach their quit attempts, particularly whether they try to stop abruptly or by gradually reducing the amount they smoke. Evidence from randomised controlled trials appears to indicate that there is no difference in the likelihood of success as a function of whether one stops gradually or abruptly and this was independent of whether pharmacotherapy, self-help therapy or behavioural support were included (Lindson, Aveyard, & Hughes, 2010). This suggests that more smokers could be led to try to quit with the help of behavioural support by permitting them to quit gradually if they wanted to. This is the basis on which the English Department of Health has proposed an extension of the English Stop Smoking Services to permit gradual quitting. However, observational data from smokers trying to stop without behavioural or pharmacological support show that those who do so gradually are less likely to succeed than those who stop abruptly (Cheong, Yong, & Borland, 2007; West, 2007). One possible explanation for the discrepancy is that smokers who elect to stop gradually are

more conflicted about stopping and that this results in lower success rates.

The issue is also of theoretical interest. It is apparent that the process of smoking cessation is fluid, highly responsive to the immediate situation and can involve both planned and unplanned quitting (Etter & Sutton, 2002; Hughes et al., 2005; Sutton, 2001; West, 2005a, 2005b, 2006; West & Sohal, 2006). A simple concept, the SNAP model, has been proposed to describe the process of smoking cessation as involving 'states' defined by a smoker's current personal rule about smoking (West, 2009). According to this model, smokers can move at any time between any of four self-defined states: 'Smoking with no firm plans to stop', 'Planning to stop', 'Attempting to stop' and 'Not smoking'. This acknowledges the fluidity of this process and the observation that smokers do not need to progress linearly through stages to achieve cessation (West, 2009). Under this model, the probability of transition between these states will be partly determined by the extent to which all aspects of their motivation coherently fit into a given state.

Thus, a smoker whose identity and desires are all strongly supportive of continued smoking would be unlikely to make a quit attempt, whereas one whose desires and identity included elements that made cessation attractive would be more likely to respond to external triggers that promoted a move to the 'attempter' or 'nonsmoker' state. More importantly, from the point of view of the present study, a smoker who was in the planning state because they were about to start a quit attempt with a behavioural support program might vary in the extent to which all elements of their desires and identity favoured cessation. Those with higher levels of conflict might be expected to frame their personal rule about stopping smoking in a way that would reflect this. In particular, they may attempt to delay the point where abstinence is required by adopting a gradual cessation rule.

Because the possible association between conflict about quitting and gradual versus abrupt cessation method cannot be examined in most stop-smoking services as these usually require abrupt cessation, we examined these issues in Malaysian stop-smoking services as these allow smokers to choose their preferred method of smoking cessation.

In summary the following research questions were addressed:

1. Can a single measure of conflict about quitting be constructed?
2. What is the prevalence of conflict about quitting in smokers attending behavioural support programs for smoking cessation?
3. What, if any, associations exist between conflict about quitting and smokers' sociodemographic and smoking characteristics?

4. Is conflict about quitting associated with the decision to stop smoking abruptly or gradually over and above motivation to stop smoking?

Methods

Study Design

This was a cross-sectional survey of smokers attending five quit smoking clinics in Malaysia between June 2007 and May 2008. Data were collected by qualified researchers trained in delivering quit smoking programs. The study received ethical approval from the Medical Ethics Committee, University of Malaya Medical Centre.

Procedure

Study clinics were selected based on a number of criteria. They had to have a standardised intervention protocol and trained quit smoking personnel, provide free NRT to smokers and have the capacity to sustain the program during the study period. As dedicated quit smoking services in Malaysia are primarily available in the public health care sector, mainly in urban clinics, we focused on these. While the private sector also provides such services, their contribution is relatively small, and not standardised.

Smokers attending selected clinics were approached and written consent obtained from those wishing to participate. Only smokers who attended clinics for their first visit were included. At the first visit, all smokers had the same treatment in the selected clinics, receiving counselling and a prescription for NRT. Consented participants were given an initial baseline questionnaire and were then interviewed face-to-face at the end of their first clinic visit.

Sample

The sample was largely representative of the general urban population, as would be expected given the clinics included in this study. Smokers were either self-referred, referred by friends, family members or their doctors and, in most cases, had sought access to clinics themselves through telephone calls for appointments or by 'walk in'. As this study formed part of a prospective investigation, the sample size ($N = 198$) was determined to provide adequate power (80%) to detect predictors that approximately doubled or halved the probability of stopping smoking successfully at four weeks and three months at a standard level of significance ($p < .05$).

Measures

Two questionnaires, a Background Information Questionnaire and a Pre-Quit Questionnaire prepared in two languages (Malay and English) were used in this study. Backward translation was carried out to ensure precision in the meaning of all the questions. Survey questions and study procedures were standardised in all clinics.

The Background Information Questionnaire obtained respondents' demographic details, health status, smoking history, current smoking habits, previous quit attempts, nicotine dependence using the Fagerstrom Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991) and the method of stopping smoking, which we define here as stopping smoking either abruptly or gradually. In addition, we also assessed motivation to stop smoking by asking participants 'How motivated are you to stop smoking completely at this quit attempt?' with response options being: *Extremely* (1), *Very* (2), *Quite* (3) or *Not very* (4).

The Pre-Quit Planning Questionnaire addressed potential conflicts in participants' decision to stop smoking (see Table 1). These measures had previously been tested in a pilot study and were selected due to their face validity as indicators of ambivalence regarding the quit decision. For reasons of simplicity, questions were recoded for analysis to provide a binary response (Yes/No).

Statistical Analysis

Principal components analysis with varimax rotation was used to establish which, if any, binary conflict measures mapped onto a distinct single component identified by scree plot and an eigenvalue > 1 . Only individual binary conflict measures with a loading of 0.5 on a distinct factor were added to produce a scale measure of conflict regarding the decision to stop smoking. Reliability of this scale was analysed with Cronbach's α . Associations between conflict scores and sociodemographic characteristics of smokers were evaluated with χ^2 and t tests for categorical and continuous variables, respectively. Logistic regression using a forced entry model that included all baseline variables (with the exception of cigarettes per day already included in the FTND score) and either the conflict scale or motivation to stop smoking was carried out to identify independent association of these measures with the decision to stop smoking gradually or abruptly. This was followed by a backward elimination model including all baseline variables and both the conflict scale and motivation to stop smoking to determine which of these putative predictors of the method of choice to stop smoking was most strongly associated with the decision to stop smoking gradually or abruptly.

Results

The sample was largely male, Malay and had received tertiary education (Table 2). Almost half were in professional, technical and business occupational categories. Nearly one third of participants reported having health problems. The mean age of smokers was 35 years, the majority having started smoking in their teens. Participants smoked an average of 17.6 cigarettes per day

Table 1

Prequit Planning Questionnaire

Conflict question	Recorded for analysis
Which of the following statements best describes what led you to come to the clinic? (Choose one answer)	Seriously thinking about quitting before (Yes: a; No: b,c) ^a
a. I had already been thinking a lot about trying to stop smoking before I heard about the clinic	
b. I had not been thinking seriously about trying to stop smoking but decided to try to stop when I heard about the clinic	
c. Neither of these statements. Please write your client statement here	
Which of the following statements best describes how you feel about your smoking? (Choose one answer)	Unhappy about being a smoker (Yes: b; No: a,c)
a. I do not really mind being 'a smoker' even though I know I should stop	
b. I am very unhappy to think of myself as 'a smoker'	
c. Neither of these statements. Please write your client statement here	
Do you enjoy smoking? (Choose one answer)	Enjoy smoking (Yes: a,b; No: c)
a. Yes, very much	
b. Yes, a little	
c. No	
Which of the following reasons were you actively thinking about when you made the decision to try to stop? (Choose as many as you like but only pick those that you can definitely remember thinking about at the time)	Pressured into stopping (Yes: e, f, g; No: a, b, c, d, h, i, j, k, l, m, n)
a. My health was already suffering because of my smoking	
b. I was worried that my health will suffer in the future	
c. I was concerned about the effect of cigarette smoke on the health of my family	
d. I thought smoking was too expensive	
e. My family wanted me to stop	
f. Nagging from family members (including wife, girlfriend)	
g. My doctor told me to stop	
h. I did not like being addicted to cigarettes	
i. I was ashamed to be a smoker	
j. I realised that smoking was stupid and pointless	
k. I had a friend or family member who had quit successfully	
l. A friend encouraged me to quit	
m. I do not need to seek nonsmoking areas to smoke	
n. Others. Please write here.	
Once you had decided to come to the clinic, which of the following best describes what you did before the date at which you were supposed to come to the clinic? (Choose one answer)	Changed cigarette consumption before clinic (Yes: b, c; No: a, d)
a. I carried on smoking normally	
b. I tried to reduce the amount I smoked	
c. I stopped smoking immediately when I made the decision	
d. Something else. Please write your own statement here	
After you had decided to stop smoking and before the date on which you were supposed to come to the clinic, how did you feel? (Choose as many as you like, but only pick ones which you definitely remember feeling at the time)	Happy about becoming a non-smoker (Yes: a; No: b, c, d, e) Worried about missing smoking (Yes: b; No: a, c, d, e) Worried about failure to stop (Yes: c; No: a, b, d, e)
a. Happy about the idea of becoming a nonsmoker	
b. Worried about what you would be missing as a smoker	
c. Worried that you might not succeed in stopping	
d. No specific feelings	
e. Something else. Please write your own statement here	
How strong is your motivation to stop smoking completely at this attempt? (Choose one answer)	Strongly motivated to stop (Yes: a, b; No: c, d) ^a
a. Extremely strong	
b. Very strong	
c. Quite strong	
d. Not very strong	
Which of the following best describes your intentions about this attempt to stop smoking? (Choose one answer)	Intend to stop smoking completely (Yes: a; No: b, c, d) ^a
a. I definitely intend to stop smoking completely and never smoke again	
b. I intend to stop smoking completely for a while but I have not decided never to smoke again	
c. I may allow myself the occasional cigarette or another form of tobacco	
d. Something else. Please write your own statement here	
Which of the following best describes how you feel right now? (Choose one answer)	Believe will stop for good this time (Yes: a; No: b, c, d) ^a
a. I know in my heart that I will stop this time and never smoke again	
b. I hope that I will succeed this time	
c. I am not sure at all I will succeed	
d. Something else. Please write your client statement here	

Note: ^aItems included in conflict scale

and the average FTND score was 4.5 while the average expired-air CO level was just above 10 ppm. Motivation to stop smoking was reasonably high and nearly three quarters of smokers had made a previous quit attempt. With regards to the current quit attempt, over a third aimed to stop smoking gradually (Table 1).

Most clinic attendees had been seriously thinking about quitting before coming to the clinic and had already changed their cigarette consumption. Just under half believed they would stop for good this time and the majority were intending to stop smoking completely and were strongly motivated to do so. Interestingly, although most smokers reported being pressured into stopping

and four out of five smokers enjoyed smoking, over half were unhappy about being a smoker and nearly three quarters were happy about becoming a nonsmoker (see Table 2).

Principal components analysis showed only one distinct component in the scree plot with an eigenvalue of 2.21, accounting for a fifth of the variance in the set of conflict measures. Five conflict items — having seriously thought about quitting before, being happy about becoming a nonsmoker, being strongly motivated to stop, intending to stop smoking completely and believing in stopping for good this time — had a loading of at least 0.5 onto this factor. These items had acceptable reli-

Table 2Baseline Characteristics by Conflict Level (*N* = 198)

	Total sample (<i>N</i> = 198)	Low conflict ^a (<i>n</i> = 95)	High conflict ^a (<i>n</i> = 103)	<i>p</i>
Sociodemographic characteristics				
Mean (<i>SD</i>) Age, years	35.0 (12.4)	36.2 (13.7)	33.9 (11.0)	.192
% (<i>n</i>) Male	95.5 (189)	96.8 (92)	94.2 (97)	.368
% (<i>n</i>) Ethnicity				
Malay	64.6 (128)	55.8 (53)	72.8 (75)	.015
Chinese	16.7 (33)	20.0 (19)	13.6 (14)	
Indian	17.7 (35)	24.2 (23)	11.7 (12)	
Other	1.0 (2)	0 (0)	1.9 (2)	
% (<i>n</i>) Education ^b				
Primary school	6.6 (13)	9.5 (9)	3.9 (4)	.284
Secondary school	50.0 (99)	48.4 (46)	51.5 (53)	
Tertiary education	43.4 (86)	42.1 (40)	44.7 (46)	
% (<i>n</i>) Occupation				
Professional, technical and business	45.5 (90)	41.1 (39)	49.5 (51)	.293
Clerical, service and armed forces	23.2 (46)	27.4 (26)	19.4 (20)	
Manual	16.2 (32)	13.7 (13)	18.4 (19)	
Retired, unemployed, housewife or student	15.2 (30)	17.9 (17)	12.6 (13)	
% (<i>n</i>) Health problems	31.8 (63)	33.7 (32)	30.1 (31)	.588
% (<i>n</i>) Clinic				
Tanglin	29.3 (58)	31.6 (30)	27.2 (28)	.085
Putrajaya	24.2 (48)	17.9 (17)	30.1 (31)	
Jinjang	23.2 (46)	25.3 (24)	21.4 (22)	
Pantai	10.1 (26)	17.9 (17)	8.7 (9)	
Kg Pandan	10.1 (20)	7.4 (7)	12.6 (13)	
Smoking characteristics				
Mean (<i>SD</i>) cigarettes smoked per day	17.6 (11.4)	19.5 (14.0)	15.9 (8.1)	.03
Mean (<i>SD</i>) FTND score ^c	4.5 (2.5)	4.9 (2.5)	4.1 (2.5)	.016
Mean (<i>SD</i>) CO reading, ppm ^d	10.8 (6.7)	10.6 (7.1)	11.0 (6.4)	.711
Mean (<i>SD</i>) Motivation to stop smoking ^e	2.3 (0.8)	1.8 (0.7)	2.7 (0.7)	< .001
% (<i>n</i>) Made previous quit attempt	75.3 (149)	84.2 (80)	67.0 (69)	.005
% (<i>n</i>) Current quit attempt—abrupt cessation	61.6 (122)	69.5 (66)	54.4 (56)	.029
Conflict characteristics				
Seriously thinking about quitting before ^f	67.2 (133)	90.5 (86)	45.6 (47)	< .001
Unhappy about being a smoker	54.0 (107)	60.0 (57)	48.5 (50)	.106
Enjoy smoking	84.3 (167)	81.1 (77)	87.4 (90)	.221
Pressured into stopping	71.2 (141)	72.6 (69)	69.9 (72)	.672
Changed cigarette consumption before clinic	62.6 (124)	67.4 (64)	58.3 (60)	.185
Happy about becoming a non-smoker ^f	70.2 (139)	91.6 (87)	50.5 (52)	< .001
Worried about missing smoking	8.1 (16)	5.3 (5)	10.7 (11)	.162
Worried about failure to stop	48.5 (96)	41.1 (39)	55.3 (57)	.044
Strongly motivated to stop ^f	56.6 (112)	85.3 (81)	30.1 (31)	< .001
Intend to stop smoking completely ^f	84.8 (168)	100.0 (95)	70.9 (103)	< .001
Believe will stop for good this time ^f	45.5 (90)	81.1 (77)	12.6 (13)	< .001

Note: ^aMedian split (low: 0–1, high: 2–5 on conflict scale); ^bTertiary Education = pre-university (A-Level/Diploma) or university education; ^cFTND = Fagerstrom Test of Nicotine Dependence; ^dppm = parts per million; ^eScale from 1 (*Extremely motivated*) to 4 (*Not very motivated*); ^fItems included in conflict scale.

ability for a short scale (Cronbach's $\alpha = .63$) and the score ranged from 0 to 5 with greater values indicating more conflict. The mean value for this scale was 1.76 (*SD* 1.5) and the median was 2.

The sample was divided into those with high and low ratings on the conflict scale using a median-split. Over half of smokers showed high conflict about quitting (52.0%, 95% CI 45.1–59.1). Individual items of the conflict scale were associated with low and high conflict in the expected direction, for example, smokers who had high conflict levels were happier to be smokers and were less likely to believe they would stop for good this time (Table 2). In terms of smokers' characteristics, Malay smokers were more likely to display high than low conflict and the inverse was the case for Indian and Chinese smokers but there were no other sociodemographic associations with conflict towards smoking cessation (Table 2). Smokers who were more nicotine dependent were also more likely to display low conflict. However, an objective measure of nicotine intake (expired air carbon monoxide) showed no differences between those with high and low conflict (Table 2). As would be expected, smokers with low conflict also appeared to be

more motivated to stop. Lastly, smokers with low conflict were more likely to have made a previous quit attempt and to choose abrupt cessation for their current quit attempt.

The association of attitudinal measures (conflict about quitting and motivation to stop smoking) with the method of smoking cessation was further elucidated in regression analysis. An initial forced entry model that included all baseline variables and either motivation to stop smoking or the conflict scale showed that both of these were associated with the choice of method to stop smoking; that is, those with lower motivation or with higher conflict were more likely to choose gradual cessation (Table 3). As conflict about quitting and motivation to stop smoking displayed high collinearity, a backward elimination model was chosen to investigate their relative contribution to the choice of quit method. This regression model indicated that men were somewhat less likely than women to decide to stop smoking gradually, smokers of Malay origin were more likely than those of Indian ethnicity to stop gradually and those attending the Tanglin clinic were much less likely to have decided to stop smoking gradually than smokers from other

Table 3
Logistic Regression Predicting Decision to Stop Smoking Gradually (*N* = 198)

Characteristics	Forced entry model ^a — 1 ^a OR (95%CI)	<i>p</i>	Forced entry model ^a — 2 ^a OR (95%CI) ^a	<i>p</i>	Backward elimination model OR (95%CI) ^b	<i>p</i>
Age, years	1.02 (0.98–1.06)	.243	1.02 (0.98–1.06)	.282	-	
Male	0.16 (0.02–1.37)	.095	0.18 (0.02–1.37)	.097	0.20 (0.04–1.11)	.065
Ethnicity						
Malay	1		1		1	
Chinese	0.52 (0.17–1.57)	.246	0.60 (0.19–1.85)	.371	0.69 (0.25–1.88)	.466
Indian	0.22 (0.06–0.98)	.046	0.23 (0.05–0.99)	.049	0.26 (0.07–0.96)	.044
Education ^c						
Primary school	1		1		—	
Secondary school	1.38 (0.25–7.47)	.712	1.39 (0.25–7.67)	.704	—	
Tertiary education	2.45 (0.43–13.97)	.313	2.25 (0.39–12.86)	.363	—	
Occupation						
Professional, technical and business	1		1		—	
Clerical, service/arm forces	3.17 (1.02–9.85)	.046	2.75 (0.89–8.48)	.078	—	
Manual	0.65 (0.17–2.46)	.524	0.72 (0.19–2.73)	.628	—	
Retired, unemployed, housewife, student	0.89 (0.25–3.19)	.861	0.81 (0.23–2.90)	.751	—	
Health problems	1.33 (0.50–3.53)	.563	1.28 (0.48–3.41)	.622	—	
Clinic						
Tanglin	1		1		1	
Putrajaya	11.90 (3.25–43.62)	< .001	8.12 (2.19–30.13)	.002	9.01 (2.57–31.62)	.001
Jinjang	9.10 (2.26–36.65)	.002	9.15 (2.30–36.36)	.002	7.28 (1.94–27.32)	.003
Pantai	97.76 (18.78–508.80)	< .001	91.08 (17.97–461.70)	< .001	66.11 (14.57–300.07)	< .001
Kg Pandan	69.01 (13.26–359.13)	< .001	54.70 (10.67–280.42)	< .001	38.73 (8.46–177.21)	< .001
FTND score ^d	1.03 (0.88–1.21)	.674	1.05 (0.89–1.23)	.579	—	
CO reading, ppm ^e	1.00 (0.94–1.05)	.831	1.00 (0.95–1.06)	.973	—	
Previous quit attempt	0.73 (0.29–1.84)	.499	0.82 (0.32–2.09)	.670	—	
Motivation to stop smoking ^f	1.71 (1.05–2.79)	.032	—	—	—	
Conflict scale	—		1.40 (1.05–1.86)	.020	1.36 (1.05–1.76)	.021

Note: ^aModel 1: Motivation but not conflict scale included, Model 2: Conflict scale but not motivation included; ^bOR = odds ratio with 95% confidence interval; ^cTertiary Education = pre-university (A-Level/Diploma) or university education; ^dFTND = Fagerstrom Test of Nicotine Dependence; ^eppm = parts per million, ^fScale from 1 (extremely motivated) to 4 (not very motivated).

clinics (Table 2). Importantly, conflict about quitting was the only significant motivational predictor of the choice of method to stop smoking selected in backward elimination, suggesting that this measure had more explanatory power than motivation to stop smoking (Table 3). A forward conditional model (data not shown) confirmed these results.

Discussion

We found that it is possible to construct a reliable scale of conflict about quitting from individual items assessing smokers' attitudes towards smoking and smoking cessation. While the questions used to assess conflict have not yet undergone extensive testing, the alpha coefficient for this scale, though moderate, was acceptable for a short scale. These results suggest the existence of an underlying single dimension that encompasses an ambivalent attitude with regards to smoking cessation.

Most smokers attending the behavioural support programs in this study reported some degree of conflicting motivations about stopping smoking. For instance, while many were unhappy about being a smoker and seemed to be internally motivated to stop smoking, most smokers also reported enjoying smoking and some degree of external pressure from family, friends or health professionals to stop. This suggests that many smokers who have made a conscious decision to stop smoking and have gone through the effort of attending a support program may still experience considerable doubt about quitting smoking. Of course, this could also reflect self-selection in that smokers who are experiencing conflict may seek out additional support to help them stop rather than going it alone.

With the exception of ethnicity, there were no sociodemographic characteristics associated with conflict about quitting. However, somewhat surprisingly, smokers who appeared more dependent were less likely to report conflicting motivations. One could speculate that those who are more dependent are aware of the hurdles involved in smoking cessation and therefore wait until they feel ready to take on the challenge of giving up smoking. However, it is difficult to interpret this finding in a quantitative study and further qualitative research may be able to unravel the meaning of these associations.

As postulated by the SNAP model, those smokers who decided to stop smoking abruptly, and thus had adopted a clear rule with strict boundaries ('I will not smoke') were less likely to exhibit signs of conflict regarding their choice to stop smoking. Although the majority of smokers who decided to stop smoking gradually endorsed positive views about stopping smoking and negative views about continuing to smoke, they were more conflicted on these issues compared with smokers who had opted for abrupt cessation. Importantly, even when controlling for sociodemographic and smoking characteristics, greater conflict in

terms of smokers' attitudes towards smoking and smoking cessation was associated with stopping smoking gradually. Moreover, while motivation to stop smoking was also associated with the choice of the smoking cessation method, as has been previously reported (Peters, Hughes, Callas, & Solomon, 2007) conflict about quitting showed a stronger association with the decision to stop gradually, suggesting that this item may present a more sensitive measure of attitudinal determinants involved in the process of quitting smoking.

Stopping smoking gradually was surprisingly common in this clinic sample. More than one third of smokers opted to stop smoking by reducing cigarette consumption initially, despite the lack of good evidence to support gradual compared with abrupt cessation. Other than conflict about quitting and motivation to stop smoking, the main determinant of the choice of the smoking cessation method was the stop-smoking clinic attended. Smokers at Tanglin clinic, which promoted abrupt quitting as the preferred method of stopping smoking, were perhaps unsurprisingly less likely to stop smoking gradually than smokers attending other clinics. This underlines the fact that while smokers do not necessarily adhere strictly to advice provided by health professionals, the protocols implemented at different smoking cessation clinics do have an impact on actual behaviour.

The study had a number of limitations. The sample was self-selected and of a particular composition typical of Malaysia. As the study was carried out in an urban setting, we cannot be sure that the sample is representative of smokers attending clinics nationally, but there is no reason to believe it is different and they shared similar characteristics nationally (Ministry of Health Malaysia, 2006). However, it is currently unclear how far these results can be generalised to other cultures and countries. For instance, in line with the characteristics of Malaysian smokers nationally, this sample was mainly male, which may have skewed results. Since this study was cross-sectional and lacked a comparator group of smokers attempting to stop without help, we cannot infer causality and it would be useful to assess this longitudinally in a cohort of smokers to identify the natural progression of conflict about quitting and its association with smoking cessation. The conflict measure was constructed from dichotomous variables and it may have been more sensitive if respondents had been allowed to use a rating scale. However, despite this, it did show a clear association with gradual versus abrupt cessation that was greater than that of a rating of motivation to stop alone.

Our results may help explain the seemingly contradictory findings with regard to the effectiveness of stopping smoking gradually or abruptly. The observed association of conflicted motivation with deciding to

stop smoking gradually may reflect a lack of appropriate commitment to the quitting process. Indeed, PRIME theory would predict that smokers who had not adopted a clear rule with regards to smoking cessation are more likely to be vulnerable to competing wants and needs that would undermine their ability to stop smoking (West, 2006). It follows that smokers who experience more opposing motivations regarding their quit attempt and thus higher levels of internal conflict will be less likely to succeed and this hypothesis now needs to be tested empirically. Since smokers who experience greater ambivalence towards smoking cessation also appear more likely to choose gradual cessation, the association of gradual cessation with failure to stop smoking may therefore not be a function of the method of stopping per se but rather a function of the type of smoker who chooses to stop smoking gradually.

Conclusions

Conflict about quitting can be conceptualised as a single dimension and is prevalent among smokers voluntarily attending stop-smoking clinics. Smokers who display greater conflict about quitting are more likely to choose gradual cessation, which may explain contradictory findings regarding the effectiveness of gradual versus abrupt cessation. The conflict measure may be a useful research tool for assessing prequit conflict in smokers attending stop-smoking services and a standardised scale of conflict about cessation could be valuable to clinicians providing advice to stop smoking. This scale now needs to be tested in other populations and its predictive validity for smoking abstinence evaluated.

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References

Cheong, Y., Yong, H.H., & Borland, R. (2007). Does how you quit affect success? A comparison between abrupt and gradual methods using data from the International Tobacco Control Policy Evaluation Study. *Nicotine and Tobacco Research*, 9, 801–810.

Etter, J.F., & Sutton, S. (2002). Assessing 'stage of change' in current and former smokers trying to stop smoking: affects

of perceived addiction, attributions for failure, and expectancy of success. *Addiction*, 97, 1171–1182.

- Heatherton, T.F., Kozlowski, L.T., Frecker, R.C., & Fagerstrom, K.O. (1991). The Fagerstrom Test for Nicotine Dependence: A revision of the Fagerstrom Tolerance Questionnaire. *British Journal of Addiction*, 86, 1119–1127.
- Hughes, J.R., Keely, J.P., Fagerstrom, K.O., & Callas, P.W. (2005). Intentions to quit smoking change over short periods of time. *Addictive Behaviours*, 30, 653–662.
- Lindson, N., Aveyard, P., & Hughes, J.R. (2010). Reduction versus abrupt cessation in smokers who want to quit. *Cochrane Database of Systematic Reviews*, 3. Art. No.: CD008033.
- McEwen, A., West, R., & McRobbie, H. (2008). Motives for smoking and their correlates in clients attending stop smoking treatment services. *Nicotine and Tobacco Research*, 10, 843–850.
- Ministry of Health Malaysia. (2006). *The third National Health and Morbidity Survey (NHMS-3)*. Kuala Lumpur, Malaysia: Author.
- Peters, E.N., Hughes, J.R., Callas, P.W., & Solomon, J. (2007). Goals indicate motivation to quit smoking. *Addiction*, 102, 1158–1163.
- Shafey, O., Eriksen, R., Ross, H., & Mackay, J. (2009). *The Tobacco Atlas*, 3rd ed. World Health Organization.
- Sutton, S. (2001). Back to the drawing board? A review of applications of the Transtheoretical model to substance use. *Addiction*, 96, 175–186.
- U.K. Department of Health. (2010). A comprehensive tobacco control strategy for England: A smokefree future. Retrieved from http://www.dh.gov.uk/en/News/Recentstories/DH_111744/
- West, R. (2007). *Key performance indicators: Findings from the smoking Toolkits Study*. Retrieved September 27, 2010, from <http://www.smokinginengland/info/>
- West, R. (2004). ABC of smoking cessation: Assessment of dependence and motivation to stop smoking. *British Medical Journal*, 328, 338–339.
- West, R. (2005a). Time for a change: Putting the Transtheoretical (Stages of Change) model to rest. *Addiction*, 100, 1036–1039.
- West, R. (2005b). What does it take for a theory to be abandoned? The Transtheoretical model of behaviour change as a test case. *Addiction*, 100, 1048–1050.
- West, R. (2006). *Theory of addiction*. Oxford, UK: Blackwell.
- West, R. (2009). The multiple facets of cigarette addiction and what they mean for encouraging and helping smokers to stop. *Journal of Chronic Obstructive Pulmonary Disease*, 6, 277–283.
- West, R., & Sohal, T. (2006). Catastrophic pathways to smoking cessation: Findings from a national survey. *British Medical Journal*, 332, 458–460.