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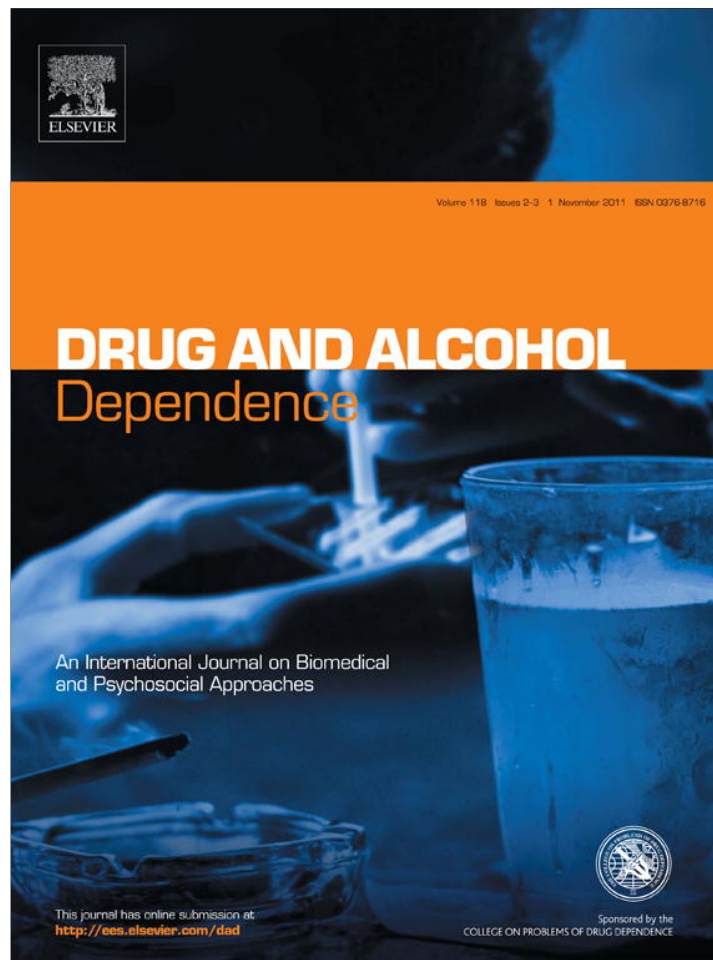
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Comparing abrupt and gradual smoking cessation: A randomized trial

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ABSTRACT

Aims: To compare abrupt and gradual smoking cessation.

Design and setting: Randomized trial and observational study, Internet, 2007–2010.

Participants: Smokers with no strong preference for abrupt or gradual quitting were randomly assigned to quitting immediately ($n = 472$), or to gradually reducing their cigarette consumption over 2 weeks and then quit ($n = 502$). Smokers who strongly preferred to quit abruptly were instructed to do so immediately ($n = 2456$), those who strongly preferred gradual were instructed to reduce their cigarette consumption over 2 weeks, then quit ($n = 1801$). Follow-up was conducted 4 weeks after target quit dates.

Findings: Those who preferred abrupt quitting were the most motivated to quit and the most confident in their ability to quit. At follow-up, quit rates were 16% in those who preferred abrupt cessation, 7% in those who preferred gradual cessation and 9% in those who had no preference ($p < 0.001$). In the latter group, quit rates were equal for those randomized to abrupt or gradual (9%, $p = 0.97$). In those who expressed a strong preference for either method, there were interactions between quitting method, motivation to quit and confidence in ability to quit: those who had low levels of motivation or low levels of confidence were more likely to quit at follow-up if they preferred and used abrupt rather than gradual.

Conclusions: In those who had no strong preference for either method, abrupt and gradual produced similar results. Those who preferred and used the abrupt method were more likely to quit than those who preferred and used the gradual method, in particular when they had low motivation and confidence.

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1. Introduction

Several observational studies found that smoking abstinence rates were higher in smokers who quit abruptly than in those who quit gradually (Cheong et al., 2007; Fiore et al., 1990; Glasgow et al., 1985; Peters et al., 2007; West et al., 2001). However, in observational studies, associations may be explained by confounding variables such as motivation to quit, self-efficacy, dependence level, or the amount of support received, as those who used the gradual method may have been less likely to receive professional support, since gradual cessation is not recommended by most treatment guidelines (Fiore, 2008; West et al., 2000). It is also possible that the lower quit rate in those who quit gradually is explained by adverse self-selection, if smokers chose the gradual method only after having failed with the abrupt method. From the literature, it is however not clear whether using abrupt versus gradual quitting is associated with motivational variables. Some studies found that gradual quitters were less motivated to quit than abrupt quitters (Peters et al., 2007) or felt more peer pressure to quit (Bolliger, 2000), but other studies found that motivation to quit, self-efficacy

and tobacco dependence were not associated with use of abrupt versus gradual methods (Cheong et al., 2007; Hughes, 2007).

1.1. Efficacy

Randomized controlled trials (RCTs) provide better evidence for causality. In smokers motivated to quit, two meta-analyses of RCTs found that abrupt quitting and gradual reduction had the same efficacy (Law and Tang, 1995; Lindson et al., 2010), but another (unpublished) meta-analysis concluded that the gradual method (“cigarette fading”) was ineffective (Fiore, 2008). Another meta-analysis found that starting a nicotine patch treatment a few weeks before quitting almost doubled the odds of quitting, compared with quitting abruptly and starting the patch on the quit date (Shiffman and Ferguson, 2008). However, three recent studies found that pre-treatment with the nicotine gum and lozenge did not increase the efficacy of nicotine therapy (Bullen et al., 2010; Etter et al., 2009; Hughes et al., 2010), and a meta-analysis found that nicotine-aided reduction was as effective as abrupt cessation (Lindson and Aveyard, 2010; Lindson et al., 2010). Finally, in smokers not motivated to quit, two meta-analyses and a literature review found that smoking reduction treatments increased the odds of future cessation (Hughes and Carpenter, 2006; Moore et al., 2009; Stead and Lancaster, 2007).

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1.2. Preference for abrupt or gradual

It is not clear which method smokers prefer. Some studies found that most smokers used the abrupt method in their most recent quit attempt (Cheong et al., 2007; Hughes, 2007; Hyland et al., 2004; Shahab et al., 2009), but others found that half or more of the smokers who planned to quit were interested in gradual rather than abrupt cessation (Hughes et al., 2007; Peters et al., 2007; Shiffman et al., 2007), and that at any time point, most smokers were attempting smoking reduction (Beard et al., 2011). Smokers' preferences may also fluctuate over time (Peters and Hughes, 2009) or geographically. Finally, there is little published research about what categories of smokers benefit the most from abrupt versus gradual cessation. One may hypothesize that the gradual method is best for heavy smokers, for those who are not confident in their ability to quit, for those who have previously failed with the abrupt method, or for ambivalent smokers who do not plan to quit soon (Hughes et al., 2010; Lindson and Aveyard, 2010).

Thus, there is a need for observational and experimental studies comparing the relative efficacy of the gradual and abrupt methods, and testing whether the differences reported in observational studies are explained by confounding effects. Studies are also needed to assess smokers' preferences for either method and to document which categories of smokers benefit the most from each method. All these are practical questions relevant to smokers, therapists and public health practitioners. In particular, offering the gradual method may attract smokers who failed with the abrupt method and are not interested in repeating a method that failed in the past. Thus, more smokers might take up treatment if gradual cessation was offered.

1.3. Aims

The aims of this study were to assess whether smokers preferred the abrupt or the gradual method, to compare smoking cessation rates for abrupt versus gradual, and to study moderators of these effects.

2. Methods

2.1. Participants

We conducted an Internet survey, in French and English, between 2007 and 2010 (during 40 months) on the smoking cessation website <http://stop-tabac.ch/>. This website is visited by smokers who want to quit smoking and by recent quitters, and receives about 90,000 visitors per month (Etter, 2006, 2009; Wang and Etter, 2004). Eligibility criteria included current daily smoking, age > 18, indication of an e-mail address, commitment to answer 3 follow-up surveys and commitment to attempt to quit using the method assigned by us (abrupt or gradual). Participants were invited by e-mail to answer follow-up surveys 2, 4 and 6 weeks after baseline.

2.2. Measurements

The baseline survey covered smoking status: daily-, occasional-, former, never-smoker (only current daily smokers were included), cigarettes per day now and 4 weeks ago, minutes to the first cigarette of the day, craving for cigarettes (5 response options), intention to quit smoking (in the next 2 weeks, not in the next 2 weeks, no intention), preference for abrupt or gradual cessation: "If you intend to quit smoking in the next 2 weeks, do you: (a) strongly prefer to quit abruptly; (b) strongly prefer to first reduce your cigarette consumption, then quit smoking in 2 weeks from now; or (c) have no strong preference for either a or b", motivation to quit and confidence in ability to quit (0–100 scales), method used for the last quit attempt (abrupt or gradual), relapse date (for smokers who had ever tried to quit), age, sex, country and a 2-item screen of depression (Whooley et al., 1997). The follow-up surveys covered any smoking (even 1 puff) in the past 24 h and 4 weeks, quit date (for those who stopped) and relapse date for those who relapsed (i.e., date when they started again to smoke, after a quit attempt).

2.3. Randomized trial

Daily smokers who had no strong preference for either abrupt or gradual ($n=974$) were randomly assigned by the computer (list of random numbers) to

receiving either the instruction (on the web page and by e-mail) to quit abruptly and immediately (group 1, $n=472$), or the instruction to gradually reduce their cigarette consumption by half over the next 2 weeks and then quit (group 2, $n=502$). Those assigned to gradual received by e-mail an individually tailored calendar indicating their target cigarette consumption for each day of the next 2 weeks. For each participant, the computer calculated a linear reduction in cig./day, ending with a 50% reduction on the day before the target quit date. We hypothesized that abrupt would be more effective than gradual, with a risk ratio of 1.4. Based on an expected quit rate of 20% in the abrupt group, we needed 950 people in the randomized trial to detect this effect (power 80%, significance level 0.05).

2.4. Observational study

In the context of a web-based study, it was not deemed feasible to ask smokers to use a method different from the method they strongly preferred. Therefore, participants who expressed a strong preference for either abrupt or gradual were ineligible for the randomized trial. Those who strongly preferred abrupt were instructed to stop smoking immediately (group 3, $n=2456$), and those who strongly preferred gradual (group 4, $n=1801$) were instructed to gradually reduce their cigarette consumption by half during the next 2 weeks and then quit, and they received the computer-tailored reduction calendar described above.

2.5. Compliance with instructions

At the 2-week survey, we used quit dates (in recent quitters) and relapse dates (in smokers who made a quit attempt after entry in the study) to assess compliance with our instructions about quitting method.

2.6. Statistical analyses

We used χ^2 tests to compare proportions and Kruskal–Wallis χ^2 tests to compare medians in 3 groups. In participants who expressed a strong preference for either method, we used multivariate logistic regression models to identify independent predictors of smoking cessation. We assessed whether associations were moderated by dependence level, craving for tobacco, motivation to quit, confidence in ability to quit, method used in the previous quit attempt, depression, age and sex. Data were analyzed "intention to treat" (including all participants and counting dropouts as smokers).

We compared groups at each follow-up survey (that is, 2, 4 and 6 weeks after baseline), and also with matched durations after the target quit date, that is, for a duration of 2 weeks post target quit date, we used the 2-week survey for groups 1 and 3 and the 4-week survey for groups 2 and 4. For a duration of 4 weeks post target quit date, we used the 4-week survey for groups 1 and 3 and the 6-week survey for groups 2 and 4.

3. Results

3.1. Participation

The screening questionnaire was answered by 19,025 people, but 13,794 were ineligible (2236 declined data storage, 2874 were former/non-daily/never smokers, 382 were <18 years, 3808 did not provide an e-mail address and 4494 did not commit to quit as requested or to answer to follow-up surveys). Most of the 5231 eligible participants were women (57%), and the median age was 34 years (Table 1). Participants lived in France (58%), Switzerland (14%), Algeria/Morocco/Tunisia (8%), Canada (6%), Belgium (5%), the USA (2%), or other countries (7%). The response rates were 47% ($n=2465$) at the 2-week survey, 32% ($n=1681$) at the 4-week survey and 24% ($n=1250$) at the 6-week survey.

3.2. Preference for abrupt versus gradual cessation

Among participants who had already tried to quit, 74% used the abrupt method for their last quit attempt and 26% used the gradual method. When asked whether, for their next quit attempt, they preferred abrupt or gradual, almost half (47%) strongly preferred to quit abruptly, one third (34%) strongly preferred to first reduce then quit 2 weeks later, and 19% had no strong preference for either method. Compared with those who preferred gradual or had no preference, those who preferred abrupt were more likely to be men, more motivated to quit and more confident in their ability to quit (Table 1). Daily cigarette consumption, minutes to

Table 1
Characteristics of daily smokers according to their preference for quitting method, Internet, 2007–2010.

	Strongly prefers abrupt	Strongly prefers gradual	No strong preference for either method	χ^2	p-Value
n-Participants	2456	1801	974		
Women (%)	50.4	61.9	63.8	79.6	<0.001
Age (median)	33	36	32	32.5	<0.001
Depression (%)	70.9	70.6	74.7	5.9	0.053
Minutes to first cigarette (median)	15	15	15	4.4	0.11
Cigarettes/day now, median (10th and 90th percentiles)	15 (5, 30)	15 (5, 30)	15 (6, 28)	12.6	0.002
Cigarettes/day 4 weeks before baseline (median)	18	18	17	3.1	0.21
Percent who reduced cig./day in the 4 weeks prior to baseline (%)	20.5	32.9	21.0	99.4	<0.001
Craving for cigarettes (% severe)	43.4	44.2	44.7	20.7	0.008
Intention to quit in next 2 weeks (%)	90.6	70.8	74.7	303.6	<0.001
Motivation to quit smoking (0–100 score, median)	90	75	75	325.1	<0.001
Confidence in ability to quit smoking (0–100 score, median)	60	50	50	156.3	<0.001
Quit abruptly on last quit attempt (%), the others quit gradually	80.7	63.5	76.9	127.4	<0.001
In those who ever tried to quit, months since last relapse (median)	14	20	18	15.0	0.001

Table 2
Smoking cessation rates, at 3 follow-up surveys, intention-to-treat analysis (non-respondents counted as smokers).

	Strongly prefers abrupt	Strongly prefers gradual	No preference for either method	χ^2	p-Value	RCT to abrupt	RCT to gradual	χ^2	p-Value
n	2456	1801	974			472	502		
2 weeks after baseline									
No puff in past 24 h (%)	18.0	8.3	9.9	95.8	<0.001	9.5	10.4	0.2	0.67
4 weeks after baseline									
No puff in past 24 h (%)	15.6	7.6	9.9	68.6	<0.001	8.7	11.2	1.7	0.20
No puff in past 4 weeks (%)	9.8	2.6	3.1	113.9	<0.001	3.0	3.2	0.0	0.84
6 weeks after baseline									
No puff in past 24 h (%)	13.8	7.1	8.0	58.0	<0.001	7.2	8.8	0.8	0.37
No puff in past 4 weeks (%)	9.7	3.7	4.1	74.2	<0.001	3.8	4.4	0.2	0.66

first cigarette, craving and depression ratings did not differ substantially among groups. In smokers who had previously tried to quit, the interval since relapse was 4–6 months shorter in those who preferred abrupt than in those who preferred gradual or had no preference. Those who preferred gradual were slightly older, less likely to have used the abrupt method for their last (failed) quit attempt, and more likely to have reduced their cigarette consumption during the 4 weeks prior to the baseline survey, but this reduction was modest (–2.8 cig./day).

3.3. Compliance with instructions at follow-up

In participants who were abstinent (no puff in past 24 h) at the survey that took place 2 weeks after baseline, the median interval since quit date was 10.5 days in those randomized to abrupt and 3 days in those randomized to gradual ($U = 222, p = 0.026$). This interval was 11 days in those who preferred abrupt and 6 days in those who preferred gradual ($U = 4176, p < 0.001$). In participants who had made a quit attempt after entry in the study, but had relapsed thereafter and smoked daily at the 2-week survey, the median interval since relapse was 8 days in those randomized to abrupt and 4.5 days in those randomized to gradual ($U = 248, p = 0.018$). This interval was 9 days in those who preferred abrupt and 5 days in those who preferred gradual ($U = 7380, p < 0.001$). These results suggest that when participants quit or tried to quit, they followed our instructions reasonably well.

3.4. Quit rates at follow-up

3.4.1. Randomized trial. Among those who had no strong preference for either method and were randomly assigned to either abrupt or gradual quitting, abstinence rates were similar between groups at all follow-up surveys (Table 2) and for all follow-up dura-

tions (that is, 2 and 4 weeks after target quit dates) (Table 3). This outcome was unchanged when data were analyzed separately in subgroups defined by dependence level, craving, motivation, confidence, depression, method used for last quit attempt, age or sex (data not shown).

3.4.2. Groups with strong preferences. At all follow-up surveys (2, 4 and 6 weeks), those who strongly preferred abrupt were about twice as likely to quit smoking as those who strongly preferred gradual (Table 2). Quit rates were also higher in the abrupt group for all follow-up durations post quit date (Table 3). The odds ratio (OR) favoring abrupt, 4 weeks after the target quit date (no puff in past 24 h), was $OR = 2.42 (p < 0.001)$.

3.5. Multivariate model

In participants who expressed a strong preference for either abrupt or gradual, a multivariate logistic regression model indicated that the following variables were independent predictors of abstinence (no puff in past 24 h), 4 weeks after the target quit date: preference for abrupt (odds ratio = 2.22, $p < 0.001$), intention to quit in the next 2 weeks (versus quit later or no intention, $OR = 2.51, p < 0.001$), depression (versus no depression, $OR = 0.59, p < 0.001$), age ($OR = 1.20$ per 10 years, $p < 0.001$), cigarettes per day ($OR = 0.79$ per 10 cigarettes, $p < 0.001$), and confidence in ability to quit ($OR = 1.06$ per 10 points on a 0–100 scale, $p = 0.003$) (non-significant variables were not included in the model).

3.6. Interaction with motivation to quit and confidence in ability to quit

In those who expressed a strong preference for either method, there was an interaction between quitting method and motivation

Table 3
Smoking cessation rates, for matched durations after target quit date, intention-to-treat analysis (non-respondents counted as smokers).

	Strongly prefers abrupt	Strongly prefers gradual	No preference for either method	χ^2	<i>p</i> -Value	RCT to abrupt	RCT to gradual	χ^2	<i>p</i> -Value
<i>n</i>	2456	1801	974			472	502		
2 weeks post quit date									
No puff in past 24 h (%)	18.0	7.6	10.4	107.6	<0.001	9.5	11.2	0.7	0.41
4 weeks post quit date									
No puff in past 24 h (%)	15.6	7.1	8.7	82.6	<0.001	8.7	8.8	0.0	0.97
No puff in past 4 weeks (%)	9.8	3.7	3.7	79.2	<0.001	3.0	4.4	1.4	0.24

to quit: those who had low levels of motivation were more likely to quit at follow-up when they preferred and used the abrupt rather than the gradual method. Specifically, abstinence (no puff in past 24 h) 4 weeks after the target quit date was associated in a dose-related manner with motivation to quit (0–100 motivation score, lowest quartile: odds ratio = 3.8 in favor of abrupt, $p < 0.001$; second quartile: OR = 2.2, $p < 0.001$; third quartile: OR = 1.7, $p = 0.019$; highest motivation quartile: OR = 1.7, $p = 0.010$). In a multivariate logistic regression model predicting abstinence at 4 weeks, with group (prefers abrupt versus prefers gradual), motivation and interaction term (group \times motivation) as predictors, the interaction term was statistically significant ($p = 0.008$).

In those who expressed a strong preference for either method, an interaction was also found between quitting method and confidence in ability to quit: those who had low levels of confidence were more likely to quit at follow-up when they preferred and used abrupt rather than gradual. Specifically, abstinence (no puff in past 24 h) 4 weeks after the target quit date was associated in a dose-related manner with confidence in ability to quit (0–100 confidence score, lowest quartile: odds ratio = 3.0 in favor of abrupt, $p < 0.001$; second quartile: OR = 3.4, $p < 0.001$; third quartile: OR = 1.7, $p = 0.007$; highest confidence quartile: OR = 1.7, $p = 0.006$). In a multivariate logistic regression model predicting abstinence at 4 weeks with group (prefers abrupt versus prefers gradual), confidence and interaction term (group \times confidence) as predictors, the interaction term was statistically significant ($p = 0.014$).

No such interaction was found for other potential moderators: dependence level, craving, depression, method used for last quit attempt, age or sex (data not shown).

4. Discussion

We found that most smokers preferred the abrupt over the gradual method, and that most had used the abrupt method for their last quit attempt. These results add useful information to the literature, since published reports about smokers' preferences for either method are contradictory (Beard et al., 2011; Cheong et al., 2007; Hughes, 2007; Hughes et al., 2007; Hyland et al., 2004; Peters et al., 2007; Shahab et al., 2009; Shiffman et al., 2007). Even though most preferred abrupt, this study confirms that a substantial proportion of smokers preferred gradual cessation (Beard et al., 2011; Hughes et al., 2007; Peters et al., 2007; Shiffman et al., 2007). Most of those who preferred the gradual method had previously failed with abrupt. This suggests that smoking cessation services should offer both methods, in order to appeal to all smokers, including those who do not want to use again a method that failed in the past.

Confirming some (Peters et al., 2007), but not all previous reports (Cheong et al., 2007), we found that preference for abrupt was associated with known predictors of abstinence such as motivation to quit and confidence in ability to quit (Etter et al., 2000; Peters et al., 2007). In addition, at baseline, time elapsed since the most recent relapse was 6 months shorter in those who preferred abrupt than in those who preferred gradual, suggesting that

the former group made more frequent quit attempts. It has been hypothesized that those who prefer the gradual method are more prone to depression, a factor that predicts relapse (Shiffman, 2005), but we found no association between depression and preference for quitting method.

In daily smokers who expressed no strong preference for either method, quitting gradually was as effective as quitting abruptly. This result is in agreement with meta-analyses, which found no difference between the effects of these two methods (Law and Tang, 1995; Lindson and Aveyard, 2010; Lindson et al., 2010). Our results suggest that, at least in those who have no strong preference, both methods are equivalent and can be recommended to smokers. However, there can be alternative reasons why we found no difference between the groups randomized to abrupt or gradual. First, compliance with instructions was not optimal. A closer supervision, with in-person contact, may have produced larger differences between methods. However, quit dates and relapse dates suggest that when participants quit smoking, they tended to use the method recommended by us. Thus, poor compliance with instructions may not explain away our results. Second, it is possible that gradual reduction works only when specific techniques are used, such as scheduled reduced smoking (Cinciripini et al., 1994, 1995). Finally, the reduction period (2 weeks) may have been too short, or the 50% reduction may not have been sufficient.

In contrast with results of the randomized trial, participants who preferred and used the abrupt method were twice as likely to quit smoking as those who preferred and used the gradual method. This effect was not explained away by confounding factors, as shown by results of the multivariate model: the stronger effect of abrupt was maintained after adjustment for known predictors of cessation, which replicates previous findings (Cheong et al., 2007). However, the list of potential confounders in our multivariate model was not comprehensive, and we cannot exclude that unmeasured confounders may explain some of the differences between groups (e.g., use of smoking cessation treatments and medications, education, alcohol use, other smokers in the household, etc.). Nevertheless, a plausible interpretation is that the method used to quit (abrupt or gradual) does matter, but only in those who express a strong preference for either method. To confirm this hypothesis, preference should be assessed in future studies.

It has been proposed that gradual cessation has a direct, negative effect on cessation (Cheong et al., 2007). First when they reduce, smokers may retain the most valued and rewarding cigarettes, these cigarettes then acquire a strong reinforcing effect, which may favor relapse. Second, during the reduction phase, smokers may lose momentum and motivation. In particular, perceived risk may decrease with decreasing cigarette consumption, thus undermining motivation to quit. Therefore, it may be preferable to quit immediately when motivation is present or when a favorable situation occurs (Larabie, 2005; West, 2006; West and Sohal, 2006), and delaying a quit attempt during the reduction phase may have deleterious effects (Hughes et al., 2010).

On the other hand, several reasons have been proposed to explain why gradual cessation might be effective. A first possible

mechanism is shaping, that is, the process of making successive approximations of the target behavior. Second, gradual reduction may have a positive effect on self-efficacy. Third, gradual reduction may decrease the conditioned association between environmental stimuli and smoking. Finally, reducing nicotine intake may reduce dependence levels. Even though we did not directly test these hypotheses, our data do not provide support for the gradual method.

4.1. Strengths and limitations

An important innovation of this study is that we took into account preference for quitting method, a variable that should also be taken into account in further studies. Also, this was a “real world” study, and it is important to test cessation methods outside laboratory or clinical settings, and in smokers who use self-help methods and do not use medications.

Another original contribution of this study is the finding of an interaction between quitting method, motivation to quit and confidence in ability to quit: smokers with low levels of motivation and low confidence were more likely to quit if they preferred and used abrupt rather than gradual. The loss of momentum occurring during the pre-cessation reduction phase may be particularly deleterious for smokers who are not very motivated to quit or not confident in their ability to quit. Experimental studies should test whether these smokers are better off if they use the abrupt method.

On the other hand, this study was conducted in visitors of a smoking cessation website, which resulted in the self-selection of smokers who were highly motivated to quit, and different results may be observed in less motivated smokers. Compared with representative samples of the general population, this sample also included more women and heavier smokers (Etter, 2010; Etter and Perneger, 2001), which may determine the generalizability of this study.

Quit rates were low, but low quit rates are usually observed in the context of unaided cessation or self-help interventions. Quit rates were low also because we counted non-respondents as smokers and dropout rates were high, even though they were comparable to dropout rates reported in a review of Internet surveys (Cook et al., 2000). Unequal dropout rates at 4 weeks and 6 weeks created a disadvantage for the gradual group when follow-up duration was tied to the target quit date. In contrast, when follow-up duration was tied to the baseline date, those in the abrupt group were at a disadvantage (because they had more time to relapse). This is why we presented the two approaches in Tables 2 and 3 (follow-up duration tied to quit date and tied to baseline date). Results were similar for the two approaches, thus, non-response bias did not explain away our results. We chose a short pre-quit reduction period (2 weeks) and a short follow-up period (4 weeks post quit date) because we were concerned that dropout rates would be even higher if the study lasted much longer, in particular because e-mail addresses may become invalid over time. Long-term studies will be necessary, in particular to assess relapse rates for each method. Finally, there was no biochemical verification of smoking abstinence, because it was not feasible in a sample enrolled across several countries, nor is it deemed necessary in this type of survey (Velicer et al., 1992). Thus, although our results provide interesting information and most results are consistent with the literature, this study should be interpreted with caution.

4.2. Conclusions

These results have implications for practice: therapists should probably determine smokers' preference for either abrupt or gradual cessation and offer both treatment options. Whether smokers with low levels of motivation and confidence should be rec-

ommended to use the abrupt method awaits confirmation from interventions studies.

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Contributors

The author designed the study, analyzed the data and wrote the paper.

Conflicts of interest

Jean-François Etter's salary is paid by the University of Geneva. He consulted for Pfizer, a manufacturer of smoking cessation medications, in 2006–2007 (on the Swiss varenicline advisory board), and received medications for a clinical trial from Pfizer in 2006. No competing interest since then.

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