Tell me why... The influence of self-involvement on short term smoking behaviour

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A B S T R A C T

Previous studies found that information is more persuasive when self-generated (high self-involvement), rather than when simply read or heard (low self-involvement). In two studies, we investigated whether differences in self-involvement concerning smoking issues would influence immediate smoking behaviour. As predicted, results indicate that participants who developed their own arguments against smoking waited longer before lighting up a cigarette than those who read arguments against smoking that were developed by other participants (Study 1). Further, participants who additionally generated their own arguments were less likely to smoke within 30 min than those who read prepared arguments against smoking (Study 2). In sum, our studies illustrate that personal involvement in generating anti-smoking arguments can reduce short term smoking behaviour.

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1. Introduction

Despite the fact that smoking is associated with increased morbidity and a number of serious illnesses (WHO, 2003), cessation rates are still rather low (STIVORO, 2007). Until recently, most anti-smoking campaigns have focussed on providing people with information about the risks and consequences of smoking, a strategy that has proven unsuccessful (Liberman & Chaiken, 1992). In the present study, we tested an alternative where the information was not externally given to participants, but self-generated.

Smoking is not only the fourth most common health hazard worldwide; it is also the second major cause of death (WHO, 2003). In the Netherlands, approximately 28% of the adult population smokes (STIVORO, 2007). It seems that several factors play a role in the development and maintenance of smoking: attitudes, beliefs, and cognitions (Chassin, Presson, & Sherman, 1984; Kleinjan, Van den Eijnden, Dijkstra, Brug, & Engels, 2006; Meier, 1991; White, McKee, & O’Malley, 2007), peer and family smoking behaviours (Flay et al., 1994; Urberg, Shyu, & Liang, 1990), mimicry (Bandura, 1986; Harakeh, Engels, Van Baaren, & Scholte, 2006), as well as psychosocial factors (Koval & Pederson, 1999; Koval, Pederson, & Chan, 2004). While many people admit that they would like to quit smoking and are motivated (Koval & Pederson, 1999; Koval, Pederson, & Chan, 2004). While many people admit that they would like to quit smoking and are motivated to do so (Burt & Peterson, 1998), only 30% who tried to stop in 2006 were successful (STIVORO, 2007). For those who continue to smoke, the question remains as to what factors and strategies will increase the potential for successful cessation. The current studies deal with the question whether self-generated anti-smoking arguments will affect actual smoking.

Most of the early non-smoking prevention programmes were designed to provide people with information about the disadvantages of smoking (Flay, 1985; Oei & Fea, 1987). While it has been argued that smokers need to be presented with arguments against smoking, it has also been suggested that the vast majority of smokers are by now well aware of the dangers of tobacco use (Tuakli, Smith, & Heaton, 1990). This suggests that continued reliance on conventional information campaigns should not be the primary tool in promoting smoking cessation. To further complicate matters, it has been shown that presenting arguments against risky behaviour can lead to defensive reactions, perhaps undermining the goals of anti-smoking efforts (for a review see Agostinelli & Grube, 2003). Prior research indeed suggests that presenting anti-smoking messages does not per se lead to the desired outcome (Liberman & Chaiken, 1992). Prevailing theories argue that these messages can be overtly confrontational and give people the impression that their ‘freedom to choose’ is threatened, which leads to the experience of psychological reactance (Brehm & Sensenig, 1966; Grandpre, Alvaro, Burgoo, Miller, & Hall, 2003). According to Brehm (1966), people could restore this freedom by engaging in the behaviours that were threatened, especially if the freedom to choose is seen as important. Applied to smokers, this...
brings about that they will react with defensive coping strategies, such as denial or defiance, which can lead to increased engagement in smoking or decreased probability of quitting smoking (Wolburg, 2006). These reactions of denial, in turn, will lead to diminished feelings of personal vulnerability among people who may otherwise undertake steps to quit smoking (Witte, 1994). Thus, confrontational prevention material can be counter-productive in reducing smoking prevalence, if people interpret this as a threat to their freedom to choose.

Recent prevention programmes have focused on the effects of different strategies to get people to stop smoking. However, this line of research concentrated largely on words, communication, and advertising (e.g. Cialdini, 2001; Perloff, 2003; Pratkanis, Aronson, Helweg-Larsen, & Collins, 2000). A typical method for changing attitudes and promoting desired behaviour is to decrease resistance against alternative or novel ways of thinking (Knowles, Butler, & Linn, 2001). In this process, a professional first confronts the individual with his/her resistance. Then, this resistance is disrupted and challenged by presenting convincing arguments.

Other studies demonstrated that the self-knowledge and self-consciousness of the smokers are also of great importance (Pallonen, Murray, Schmid, Pirie, & Luepker, 1990). Therefore, researchers are beginning to take into account the impact of self-involvement in persuasion. Mussweiler and Neumann (2000) proposed that oneself provides more convincing information than the information provided by an external source, due to our tendency to correct for information provided from an external source. While this judgemental correction is typical for externally provided information (Higgins, 1996; Strack, 1992), people seemingly fail to correct for the influence of self-generated information. The authors propose that ‘accessibility stemming from an internal contaminating source may be more difficult to distinguish from accessibility stemming from the target itself’ (Mussweiler & Neumann, 2000, pp. 204). Therefore, people may be more likely to use easily accessible concepts and do not correct for potentially contaminating effects of self-generated knowledge. Gregory, Cialdini, and Carpenter (1982) demonstrated the saliency of self-involvement on persuasion: participants rated a set of scenarios as more likely to happen if they were asked to imagine to be in the given situation than if they were just instructed to read or listen to the scenarios. Sutton, Marsh, and Matheson (1987) extended these findings by demonstrating that if smokers translated their desire to quit smoking into their own concrete and specific arguments, the subsequent intentions to stop smoking were much stronger than in smokers who formulated vague and self-unrelated arguments. In line with these findings are studies that focused on identification as a smoker, which asserted that self-involvement was high in individuals who strongly identified themselves as smokers. Falomir-Pichastor, Invernizzi, Mugny, Munoz, and Quiamzade (2002) found that people who have a strong identity as a smoker feel threatened by respectful anti-smoking messages. Hence, the role of self-involvement further influences sensitivity to the way persuasive messages are perceived and integrated.

Further theoretical support for the influence of self-involvement in persuasion comes from studies focussing on self-perception (Bem, 1965, 1967). According to the Self-perception theory, observation of one’s own behaviour could serve as a base for the individual’s judgements of attitudes and beliefs. Just like an outside observer, we infer our inner states by observing what we are doing. Thus, if smokers perceive themselves arguing against smoking they may be more convinced by their own arguments than if the same information is given by an external source. The current studies build on the evidence for self-involvement as an important target in anti-smoking intervention strategies. The previous studies on self-involvement, however, only focused on attitudes and self-reported intentions, which is problematic given the often little attitude-behaviour correlation in risky and socially undesirable behaviours (Fazio & Towles-Schwen, 1999). Instead of focussing on self-report measures or on altering intentions to stop smoking, we attempted to influence real smoking behaviour and tried to trigger short-term abstinence. We investigated whether differences in involvement in generating anti-smoking arguments (involvement vs. no involvement) would predict the time participants wait before lighting up their next cigarette. In the ‘Self-involvement’ condition, participants had to generate their own arguments as to why smoking is bad. In the ‘no Self-involvement’ condition, participants read anti-smoking arguments and were instructed to check whether the arguments were grammatically correct. We expected that participants in the ‘Self-involvement’ condition would abstain longer from smoking than participants in the ‘no Self-involvement’ condition.

2. Study 1

2.1. Method

2.1.1. Participants and design

A single-factor design (self-involvement: yes vs. no) was used, with self-involvement serving as between-subjects factor and time of abstinence (in minutes) as dependent variable. 24 students (5 male, 19 female) from the Radboud University Nijmegen participated in this study; their age range was 19–23 (M=22.2, SD=3.1). All participants were daily smokers: 25% smoked 1–5 cigarettes/day, 41.7% 6–10 cigarettes/day, 20.8% 11–20 cigarettes/day, and 12.5% 21–40 cigarettes/day. They received credit points for participation and were randomly assigned to one of the two experimental conditions. Furthermore, it was checked whether the two groups differed in personal characteristics (number of cigarettes smoked per day, attempts to give up smoking, intentions to quit smoking); no significant differences were found (Table 1).

2.1.2. Procedure

The experiment was run in the bar lab of the Behavioural Science Institute at the Radboud University Nijmegen. In this setting, it was possible to observe participants in a naturalistic setting (see also Harakeh et al., 2006). Participants were asked to sit at a small table. In addition to some magazines, a glass with cigarettes and a lighter were placed on the table. Participants were informed that the experiment consisted of three small and unrelated parts with no breaks in between. All instructions and tasks were given both verbally and in writing; the duration of the experiment was approximately 35 min.

Participants were told that the first experiment was conducted to investigate the influence of smoking on their memory abilities. They were given the instruction to smoke a cigarette while trying to remember 10 words written on a paper. The participants could either smoke their own cigarette or take one of the cigarettes from the table.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Mean scores, standard deviations, and percentages on personal characteristics for study 1</th>
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<tbody>
<tr>
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<td>Self-involvement (N=12)</td>
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<td>M</td>
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<tr>
<td>Number of cigarettes smoked per day</td>
<td>12.25</td>
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<tr>
<td>Attempts to give up smoking</td>
<td>1.50</td>
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<td>Intention to quit smoking (yes answers)</td>
<td>75% (N=9)</td>
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The real aim of the first study was to ‘force’ all participants to smoke a cigarette before the actual experiment started, reducing the degree to which observed smoking behaviour was moderated by differences in craving. When participants stubbed out this initial cigarette, the experimenter approached the participants to explain the second experiment.

Participants were told that the second task involved testing their argumentation ability. In the ‘Self-involvement’ condition, participants were instructed to write down as many arguments they could think of why experimenting on animals, nuclear energy, and smoking are bad. Topic order was the same for all participants, with smoking arguments produced directly before the beginning of the third task. Participants were also asked to write down their student number on the paper. This way, we tried to increase their feeling of personal involvement and social control.

In the ‘no Self-involvement’ condition, participants were given a page with several arguments about animal experiments, nuclear energy, and smoking. These arguments were collected from another group of smokers who were asked to come up with arguments about these three topics, which were then used to create a representative list. The order of these predefined arguments was the same as in the ‘Self-involvement’ condition. In both conditions, participants had five minutes to read the statements or to write down their own arguments.

After finishing the second task, participants were told that the last experiment involved a short computer task. They were informed that the experimenter had some problems with starting up the computer program and that it could take about 15 min before they could proceed with the third part of the experiment.

While waiting, participants were observed with a hidden camera. If participants lit a second cigarette within 30 min, they were approached by the experimenter who told them that the computer was not working correctly and that they did not have to complete the computer task. If participants did not light up a cigarette within 30 min, the observation was stopped and the participants were told the similar story.

Finally, the experimenter handed out a short questionnaire to fill in personal information and smoking habits. After completing the questionnaire, all participants were debriefed, paid, and thanked for their participation.

2.1.3. Measures
In the observation room, the experimenter scored the time participants abstained from smoking with a stop watch. If participants did not light up a cigarette within 30 min this meant a score of 30.

In the handout questionnaire at the end of the experiment participants were asked about their participation. Participants were randomly assigned to one of the two conditions, which observed smoking behaviour was moderated by differences in craving. When participants stubbed out this initial cigarette, the experimenter approached the participants to explain the second experiment.

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Finally, the experimenter handed out a short questionnaire to fill in personal information and smoking habits. After completing the questionnaire, all participants were debriefed, paid, and thanked for their participation.

2.2. Results and discussion
A Kolmogorov–Smirnov test revealed that our dependent variable, ‘time until the second cigarette was lit’, was not normally distributed, $D(24)=.36; p=.000$. Therefore, a Mann–Whitney $U$ test was conducted to test the hypothesis that participants who generated arguments against smoking abstained longer from smoking than participants who were not personally involved. A trend was found that Self-involvement influenced the time until a second cigarette was lit up, $U=51.0, p=.09, r=−.28$ (1-tailed). Participants who personally generated arguments waited longer before they smoked the second cigarette (Mean Rank=14.25 min) than participants who only read arguments (Mean Rank=10.75 min). However, whether participants lit up a second cigarette, did not differ between conditions, $\chi^2 (1)= 0.69, p=.40$.

These findings provide only tentative support for our hypothesis that being involved in generating anti-smoking arguments decreases short-term smoking behaviour. The results are in line with previous findings that persuasion is more effective if provided by oneself than when provided externally (Mussweiler & Neumann, 2000). However, we only found a trend of self-involvement on smoking. Given the small sample size of 24 students, this may be a problem of statistical power. In our second study, we tried to avoid this weakness by using a larger sample.

A particular aspect of our self-involvement manipulation may cause the finding that participants will refrain longer from smoking after generating their own anti-smoking arguments. Participants in the ‘Self-involvement’ condition not only generated arguments against smoking but also against nuclear energy and animal experiments. Rather than being a particular effect by generating own anti-smoking arguments, it is possible that their behaviour was driven by a more general attempt to be a ‘good’ person who behaves in an exemplary way. To clarify this ambiguity, we modified the manipulation in our second experiment, only the anti-smoking arguments had to be written down on the page in the ‘Self-involvement’ condition, the arguments against the other two topics were already printed.

3. Study 2

3.1. Method

3.1.1. Participants and design
The same approach was used as in Study 1, with Self-involvement (self-involvement: yes vs. no) serving as between-subjects factor, and time of abstinence (in minutes) as dependent variable. Forty students (13 male, 27 female) from the Radboud University Nijmegen participated in this study; their age range was 17–47 (Mean=22.4, SD=4.7). All participants were daily smokers: 20.5% smoked 1–5 cigarettes/day, 41% 6–10 cigarettes/day, and 38.5% 11–20 cigarettes/day. They received credit points or financial compensation for their participation. Participants were randomly assigned to one of the two experimental conditions. Four participants were excluded from the analysis, because they either did not believe the cover story, or reported that their smoking behaviour was momentarily influenced by illness. Again, no group differences were found on the secondary variables (number of cigarettes smoked per day, attempts to give up smoking, number of cigarettes smoked on the day of the experiment, intentions to quit smoking; Table 2).

3.1.2. Procedure
Setting and procedure were similar to the first study. Again, the experiment was run in the bar lab of the Behavioural Science Institute
at the Radboud University Nijmegen. Participants were told the same cover story; that the experiment consisted of three small and unrelated components with no break in between. The duration of the experiment was approximately 35 min.

The self-involvement manipulation was the same as in Study 1. To make the two conditions even more similar, the participants in the ‘Self-involvement’ condition only had to generate their own arguments about why they thought smoking was bad. The standard arguments used in ‘no Self-involvement’ were now also presented for animal research and nuclear energy in the ‘Self-involvement’ condition. Again, the experiment was finished if participants either lit up a second cigarette or did not smoke within 30 min. Finally, the participants completed a revised form of the questionnaire used in the first study. After completing the questionnaires, all participants were debriefed, paid, and thanked for their participation.

3.1.3. Measures

In the observation room, the experimenter scored the time the participants abstained from smoking with a stopwatch. If the participants did not light up a cigarette within 30 min this meant a score of 30.

The questionnaire handed out at the end of the experiment was the same as in Experiment 1, except for the addition of some other questions. Now, the participants also had to evaluate their own smoking behaviour (‘How do you evaluate your own smoking behaviour?’), smoking restrictions in public (‘How do you evaluate the new smoking restrictions in public?’), as well as questions concerning their craving while waiting (‘Did you have to restrain yourself from not smoking?’, ‘Did you want to start smoking while you were waiting?’), using a 7-point Likert scale.

3.2. Results and discussion

As in Study 1, a Kolmogorov–Smirnov test revealed that our dependent variable, ‘time until a second cigarette was lit’, was not normally distributed, $D_{36} = .26$, $p = .000$. Therefore, a Mann–Whitney $U$ test was conducted to test the hypothesis that the participants who were personally involved in generating arguments against smoking refrained longer from smoking than the participants who were not personally involved. Self-involvement had a significant effect on time, $U = 108.5, p = .04, r = -.29$ (1-tailed). The participants who generated their own arguments waited longer before smoking a second cigarette (Mean Rank = 21.29 min) than the participants who only read the arguments (Mean Rank = 15.38 min). This effect is explained in part by the fact that the participants in the ‘Self-involvement’ condition lit up a cigarette less often (29.4%) than the participants in the ‘no Self-involvement’ condition (63.2%), $\chi^2 = 1 = 4.10, p = .04$. Based on the odds of ratio, the participants in the ‘no Self-involvement’ condition were 4.11 times more likely to smoke a second cigarette than the participants in the ‘Self-involvement’ condition.

To examine whether the conditions had influence on the participants’ evaluations of their own smoking behaviour, smoking restrictions, and craving, a MANOVA was conducted with Self-involvement (yes vs. no) as between-subjects factor, the evaluations of the participants own smoking behaviour, their smoking restrictions in public, and the two craving items as dependent variables. For all items, no differences were found between conditions ($F$s < 1, n.s.).

Thus, we found additional support for our prediction that self-involvement in generating anti-smoking arguments positively influences abstinence and refraining from smoking.

4. General discussion

The main purpose of the present research was to investigate the influence of self-involvement on immediate smoking behaviour. We hypothesized that participants who actively generated anti-smoking arguments would abstain longer from smoking than participants who were presented with printed anti-smoking arguments. Our results support this prediction: in Study 1, the participants who had to write down their own arguments against smoking waited longer before lighting up a second cigarette than the participants who read arguments against smoking, although we only found a trend that supported our hypothesis. In Study 2, self-involvement in producing anti-smoking arguments caused participants to refrain longer from smoking. Participants who wrote down their own arguments against smoking were significantly less likely to smoke a second cigarette than participants who only read arguments against smoking. Besides, no differences in craving were found between the two conditions.

Thus, the manipulation only influenced immediate smoking behaviour without increasing the urge to smoke, compared to the ‘no Self-involvement’ condition. It appears that psychological reactance and defensive coping strategies, which could lead to an increase in smoking behaviour (Brehm & Sensenig, 1966; Wolburg, 2006), can be avoided by an increase in self-involvement of smokers. Clearly, people draw conclusions about their beliefs and attitudes by observing their own behaviour (Bern, 1965, 1967), and try to correct for influences of externally provided information, however, not for influences of self-generated information (Mussweiler & Neumann, 2000). Besides that own involvement in translating one’s desire to quit smoking into concrete and specific arguments strengthens the intentions to stop smoking (Sutton et al., 1987), we could demonstrate that also own involvement in generating specific arguments against smoking influences smoking behaviour. Although we only found a trend in Study 1, it seems plausible that this it was due to the small sample size, especially when considering that findings were replicated in Study 2 where we used a slightly different method. Also, the participants in both studies had little time to come up with arguments against smoking. Allowing participants to spend more time on this task could possibly lead to stronger effects by self-involvement.

However, it is still unclear whether the written anti-smoking arguments leads to a decrease in time before the next cigarette is lit up, or whether self-involvement in generating anti-smoking arguments lead to an increased time interval. To answer this question, a baseline condition is necessary, in which participants are provided with arguments about topics unrelated to smoking. Additionally, baseline data could also clarify whether craving increases after manipulation of the levels of self-involvement. Further support for the hypothesis that self-involvement influences smoking behaviour could come from data of a fourth group in which the participants should generate pro-smoking arguments. Since people correct less for self-generated information (Mussweiler & Neumann, 2000), the participants in the ‘pro-smoking’ condition should smoke more, respectively, earlier, than the participants who do not. However, including such a condition is ethically questionable and should only follow after careful considerations about the possible long-term consequences.

In the present research, the population consisted of daily smoking students only, and no further moderators were assessed. The two samples in our study were relatively heterogeneous, and it would be advisable for a follow-up study to either use participants who smoke a certain number of cigarettes per day, or increase the sample size to explore whether the effects of self-involvement on immediate smoking behaviour are different for light and heavy smokers. Since our sample did not include many ‘packet-a-day’ smokers, it is questionable whether our results can be generalized to these heavy smokers, i.e. heavy smokers less often choose to not smoke a cigarette than light smokers. An important next step is, therefore, to prove whether a generalisation to other smoking populations is possible, to explore whether and how manipulating levels of self-involvement influence immediate smoking behaviour in these populations, and to check for possible moderating effects. Recent research shows that the identity as a smoker influences the way persuasive messages are
perceived and integrated (Falomir-Pichastor et al., 2002). In future research, it would be interesting to explore whether highly committed smokers are more vulnerable to persuasive methods that require higher levels of self-involvement of the receiver, or whether they will feel even more threatened by these methods, which may again result in a defensive coping strategy (as demonstrated in Liberman & Chaiken, 1992).

To include self-involvement procedures in prevention and intervention programmes, it would further be interesting whether just thinking about anti-smoking arguments will have the same effects and help people to abstain longer from smoking, and how long-term smoking could be changed effectively. One possibility could be to repeat the procedure several times. Clinical psychology research on cognitive bias modification techniques already use such repeating training procedures to change maladaptive interpretation styles and behaviours, and the results are promising so far (e.g. Mathews & Backintosh, 2000). In addition, generating arguments why certain behaviour is maladaptive could be incorporated in intervention programmes which already focus on an active role of the client (e.g. ‘Motivational Interviewing’, Rollnick & Miller, 1995; Suarez & Mullins, 2008), and making it possible for people to engage in the desired behaviours.

In two studies, we succeeded in inhibiting immediate smoking behaviour by means of indirect manipulations. Since smoking is a serious health problem in our society, our results are of special significance when considering new prevention and cessation programmes. Therefore, it is essential to examine how the immediate effects we found can be used to influence long-term smoking behaviours and successful cessation. We think that current techniques could be improved by not only providing anti-smoking arguments, but by involving people more deeply in processing and generating these arguments. Including high self-involvement processes in health education programmes (e.g. Mellonby, Rees, & Tipp, 2000; Rollnick & Miller, 1995; Wahlgren et al., 1997) might be helpful for people to overcome their addiction.

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References


