

Imitation of cigarette smoking: An experimental study on smoking in a naturalistic setting

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Abstract

Aims: Examine whether smokers imitate smoking behaviour of strangers and to what extent this is moderated by the nature of social interactions.

Design and participants: An experiment with a three (heavy smoking, light smoking, or no smoking condition) by two (warm versus cold social interaction condition) factorial design. Daily smoking young adults were exposed to same-gender confederates and were observed in a bar laboratory.

Measurements: Smoking and social behaviour were observed and coded during a 30-min break between two tasks, consisting of rating television advertisements.

Findings: Participants imitated the smoking behaviour of confederates. After controlling for young people's craving, confederate's smoking explains 35% of the variance in the number of cigarettes smoked. Participants are more likely to smoke and to continue smoking in the warm social interaction condition. Lighting up the first cigarette was affected by confederate's smoking and participant's urges to smoke. Lighting up a second was affected by the heavy smoking condition and warm social interaction condition. Lighting up a third cigarette was affected only by the heavy smoking condition.

Conclusion: Imitation largely explains why individuals light up a cigarette and continue to smoke.

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1. Introduction

Tobacco consumption and exposure to tobacco smoke cause death, disease and disability all over the world which, in addition, lead to devastating economic costs and consequences. People smoke and are exposed to smoke especially in public places such as public transport, bars, restaurants, work and educational environment (WHO, 2002). To control tobacco, governmental actions are needed to ban smoking in social settings and public places. In the current study, we examine to what extent exposure to smoking models in a social setting (a bar) affects individual smoking levels. Insights into these mechanisms help in the development and implementation of policy measures that focus on banning smoking in social situations.

Many people start experimenting with smoking during adolescence and a substantial part end up as daily smokers in late adolescence and young adulthood. It is therefore important to identify which environmental factors cause late adolescents and young adults to maintain smoking. Imitation plays a major role in the development and maintenance of addictive behaviours such as smoking (Bandura, 1977, 1986). People often imitate the behaviour of others spontaneously and without being aware that they are imitating behaviour, or that they are functioning as a role model in social interactions (Van Baaren, 2003). However, in some cases individuals intentionally imitate other individuals, e.g., when it may lead to immediate positive rewards, or may offer some advantage in initiating and continuing social relationships. In everyday life, we are exposed to different models, for example, in the visual media (e.g., movie, television and sport personalities), at home (e.g., parents, siblings), at work or school (e.g., peers), or in peer groups (e.g., friends, romantic partners), which may affect our smoking behaviour. It is known

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that we imitate the behaviour of others we like (e.g., parents and friends) or individuals we adore and who function as a role model (e.g., celebrities, famous people), but we may even imitate the behaviour of strangers (Chartrand and Bargh, 1999).

The present experimental study investigates whether young adults imitate the smoking behaviour of complete strangers. Two experimental studies conducted in the late 1970s indicated that imitation plays an important role in maintaining individuals' smoking (Antonuccio and Lichtenstein, 1980; Miller et al., 1979), but neither of these studies measured ad lib (spontaneous) smoking. In these two studies, it was stressed that during the experiment the participants were allowed to smoke, participants were instructed to smoke at least a few cigarettes, and cigarettes were provided freely on the table. In contrast to these two studies, in the present study, we were specifically interested in ad lib smoking and the generalization of our findings to the 'real life' situation. To our knowledge no experimental studies have investigated whether people spontaneously imitate the smoking behaviour of complete strangers, apart from one experimental study by Kniskern et al. (1983): using data from 56 students they reported that adolescent smokers are influenced by smoking models.

In the alcohol literature some experimental studies have explored the imitation of alcohol consumption, taking into account ad lib drinking and spontaneous imitation. It was found that imitation plays an important role in an individual's alcohol consumption, modifying his/her drinking rate in the direction of the drinking rate of the model (e.g., Collins and Marlatt, 1981; see also review of Quigley and Collins, 1999; Rosenbluth et al., 1978). Based on the outcomes of these experimental alcohol studies one might assume that in relation to smoking that participants will also imitate the smoking behaviour of the model.

Whether or not a person starts imitating another person's smoking may depend on the quality of the social interaction. We assume that imitation will occur more in situations in which individuals feel connected with each other. An individual will be more likely to imitate someone else's behaviour in a situation in which the other shows interest, acts in a friendly way and shows empathy (i.e., 'interpersonal closeness'), in contrast to a situation where the other individual is indifferent, and does not interact (Van Baaren, 2003). Thus, a warm and interactive individual will be a more attractive model than an unsociable model (Parks, 1980; Reid, 1978). Although the findings concerning the imitation of alcohol consumption and the nature of social interaction were ambiguous, these studies generally support the assumption that the magnitude and duration of imitation depends on the quality of the social interaction (Collins et al., 1985; Parks, 1980; Reid, 1978).

The present observational experimental study investigated the effect of peer smoking and the nature of social interaction on young adults' smoking behaviour (i.e., cigarette frequency, cigarette duration, and inter-cigarette interval) in a bar lab setting. We investigated whether the smoking condition (i.e., non-smoking, light smoking, and heavy smoking), the nature of the social interaction (warm versus cold model), sex of the participant, and participant's general urge to smoke in different situations (i.e., craving) would predict the number of cigarettes

smoked during the break. We also tested what the predictors were for a participant to light up the first cigarette, the second cigarette, and the third cigarette in a time-out situation. Finally, we examined whether there was an interaction between the nature of the social interaction and the smoking condition.

2. Method

2.1. Design and participants

An experimental design with a three (smoking condition) by two (nature of social interaction) factorial design was used. The confederate's smoking was divided into a non-smoking (confederate smoked zero cigarette), light smoking (confederate smoked one cigarette), and heavy smoking (confederate smoked four cigarettes) condition, and the nature of social interaction was divided into a sociable (i.e., warm) and unsociable (i.e., cold) condition.

A total of 125 young adults (primarily college and University students), 63 females and 62 males participated; their age range 18–33 years ($M = 22.08$; $S.D. = 2.61$). Participant's age of smoking onset was 13.82 ($S.D. = 2.82$) years. All participants smoked daily; 20.8% smoked 1–5 cigarettes/day, 28.8% 6–10 cigarettes/day, 41.6% 11–20 cigarettes/day, and 8.8% 21–30 cigarettes/day. Analysis of variance (i.e., one-way ANOVA) were used to test for differences in participant characteristics (i.e., age, number of cigarettes smoked daily, tried to smoke less and/or quit smoking, intention to quit smoking, nicotine dependence) between the six conditions; no significant differences were found between the conditions.

2.2. Procedure

Participants who were smoking outside (on campus) were asked if they were daily smokers and were willing to participate in a study where they had to judge (on television) general advertisements and a smoking-prevention campaign aimed at daily smokers. No information was provided about the real aim of the study, i.e., whether participants imitate the smoking behaviour of another unfamiliar individual. This type of procedure has been used in several experiments on imitation and alcohol consumption (see Quigley and Collins, 1999). In the present study, to observe the participant in a naturalistic setting, we simulated a bar in one of the university buildings (for more information on the bar lab, see Bot et al., 2005). The participants were invited to our bar lab in the period January–April 2005, for a session lasting 1 h. Of the 137 participants who participated, 125 were included in the analyses; 12 participants dropped-out from the analyses (nine males and three females) because they had recently stopped smoking, were not a daily smoker (smoked less than one cigarette per day), or they suspected that the other person was an accomplice in the study.

Eight undergraduate students (five females and three males) who were regular smokers acted as a confederate. In each session two persons participated, one was the actual observed participant, the other was the confederate who acted as though they were an 'ordinary' participant. Confederates and participants were always of the same gender to avoid confounding effects of 'attractiveness'. Before each session, the confederate was told whether during the break he/she had to smoke zero, one or four cigarettes (cigarettes were provided to the confederate) and whether he/she should act as the warm or cold model. In the sociable condition, the confederate was warm and friendly, talking cheerfully, initiating and maintaining a conversation with the participant on topics the participant showed interest in (e.g., sports, education, leisure activities, etc.) while avoiding matters related to the experiment, and generally reflecting and agreeing with the participant's point of view. The confederate also used warm and friendly non-verbal gestures, e.g., smiling, maintaining eye contact, leaning forward, etc. (see also Caudill and Kong, 2001). In the unsociable condition, the confederate showed no interest in the participant, read magazines on the table, did not initiate or maintain a conversation with the participant, and responded to statements or questions of the participant with a single word or short phrase. The confederate also acted unresponsively non-verbally by, e.g., not smiling, being restrained in gestures and body movements, avoiding eye contact, leaning away from the participant, etc. However, although the confederates were mainly unresponsive, they were instructed not to be aggressive or hostile.

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