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Seeing and Liking Cigarette Advertisements: Is There a 'Mere Exposure' Effect?

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Key Words
Tobacco marketing · Mere exposure · Smoking · Youth · Germany

Abstract
Aims: We aimed to explain the association between exposure to a cigarette advertisement and favorable attitudes towards the advertisement. ***Methods:*** We used data from an observational cross-sectional study with a sample of 3,415 German schoolchildren aged 10–17 years. Cigarette advertising exposure was assessed with an image of a Marlboro ad, asking for contact frequency (number of times seen the ad) and brand name. Liking of the ad was measured with two items (alpha = 0.78). ***Results:*** We found a positive linear association between exposure to the Marlboro ad and liking it. This association remained significant (standardized $\beta = 0.09$; $p < 0.001$) even after statistical control for smoking status, smoking of friends and parents, attitudes towards smoking in general, cigarette advertising receptivity (having a favorite cigarette ad), exposure to other advertisings, age, sex, socioeconomic status, rebelliousness and sensation seeking, self-reported school performance, and study region. ***Conclusions:*** The association between exposure to an advertisement and liking it was robust and could not be fully explained without referring to either unmeasured confounding or implicit advertising effects (e.g. mere exposure). Implicit effects have implications for prevention strategies as it may be very difficult to counteract unconscious advertising effects.

Introduction

Smoking remains the single greatest preventable cause of mortality worldwide, as it is a major risk factor for a number of life-threatening diseases including various cancers, cardiovascular diseases, and lung diseases [1–3]. A substantial amount of research has been conducted investigating the relationship between tobacco marketing and smoking behavior, particularly among adolescents. A recently published monograph of the National Cancer Institute concluded that 'the evidence base indicates a causal relationship between tobacco advertising and increased levels of tobacco initiation and continued consumption' [4, p. 211]. Similarly, a Cochrane review [5], a Surgeon General Report [6], and a systematic review of the research [7] concluded that the association between tobacco marketing and adolescent smoking initiation is causal.

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Little attention has been allocated to the underlying mechanisms of this association. In accordance with the theory of reasoned action [8], respective of the theory of planned behavior [9], adolescents smoke because they believe that the benefits outweigh the costs. Hence, it seems obvious that an important function of advertising of all kinds is to promote the benefits of using a product. This does not necessarily imply concrete information about the advertised product. In the case of cigarette advertising it seems to be the propagation of positive images (e.g. independence, masculinity, sexiness) that promotes the benefits of smoking.

However, besides this rather obvious form of advertising function (which assumes and requires some sort of active elaboration of the ad contents) there might also be less deliberate ways in which recipients of advertising are influenced. For example, there is a psychological phenomenon called the 'mere exposure' effect that suggests that people tend to develop a preference for things merely because they are familiar with them. The earliest known research on the mere exposure effect was conducted by Gustav Fechner in 1876 [10]. In the 1960s, a series of laboratory experiments by Robert Zajonc [11] demonstrated that simply exposing subjects to an unfamiliar stimulus led them to rate it more positively than other similar stimuli which had not been presented. Researchers have used stimuli like words, Chinese characters, paintings, pictures of faces, geometric figures, and auditory stimuli in these experiments. According to Zajonc [12], the exposure effect is capable of taking place without conscious cognition. He therefore concluded that 'preferences need no inferences'.

The aim of the present study was to transfer this concept to the field of tobacco marketing. We investigated if a 'mere exposure' effect might occur when being exposed to tobacco advertisements. Knowledge about such mechanisms is not merely of theoretical value. Implicit advertising effects also have practical implications as they underline the potential difficulty to immunize adolescents against advertising influences.

Methods

Overview

Study details have been described elsewhere [13, 14]. In brief, we invited 120 randomly selected schools from three states of Germany (Brandenburg, Hamburg, and Schleswig-Holstein) to participate in a school-based survey. We distributed a self-administrated written survey in 2008 to adolescents (aged 10–17 years) enrolled in the 29 schools that agreed to participate. Trained research staff administered confidential surveys during class time with parental written permission and student assent. Study implementation was approved by the Ministries of Cultural Affairs of the three involved states. Ethical approval was obtained from the Ethical Committee of the Medical Faculty of the University of Kiel (Ref.: D 417/08).

Participants

The final sample consisted of 3,415 students, of whom 51.6% were girls. The mean age was 12.5 years (SD 1.06) with a range of 10–17 years and a median of 12 years.

Measures

Student self-reports included (1) advertising exposure, (2) attitudes towards the ad, and (3) potential covariates.

Advertising Exposure

Students were provided with printed colored images of a Marlboro ad and an ad for a beer-mixed drink ('Cab') as a control ad. The Marlboro ad image was taken from billboard advertising and the control ad was a fixed image of a TV ad. In both images, all brand information was digitally removed (fig. 1).

Exposure to the ads was measured with the following item 'How often have you seen this ad?' with four response categories: 'never', '1 to 4 times', '5 to 10 times', 'more than 10 times'. In order to validate this exposure measure we asked the students in an open format which brand was advertised (cued recall).

Attitudes towards the Marlboro Ad

Attitudes were measured with a two item index (alpha = 0.78) including the statements 'This ad … (a) I like it … and (b) is cool' with four response categories: 'not at all true', 'a little true', 'pretty much true', and 'very much true'. The range of this variable was 0–3 with a mean of 0.56 (SD = 0.69).

Covariates

A number of covariates were assessed that might be directly and/or indirectly related to Marlboro ad exposure and attitudes towards the ad, respectively.

Students' smoking behavior was assessed with a combination of two items assessing life-time and current smoking (alpha = 0.68). Lifetime smoking was assessed through the question: 'How many cigarettes have you smoked in your life?' (9 categories ranging from 0 = none to 8 = more than 100 cigarettes) [15]. Current smoking was assessed through the question: 'How often do you smoke at present?' (I don't smoke, less than once a month, at least once a month but not weekly, at least once a week but not daily, every day). The combined variable ranged from 0 to 6 and had the following distribution: 0 (never smokers) 68.9%; 0.5: 10.8%; 1: 2.9%; 1.5: 1.8%; 2: 2.9%; 2.5: 2.1%; 3: 2.3%; 3.5: 2.1%; 4: 1.2%; 4.5: 0.9%; 5: 1.1%; 5.5: 1.2%; and 6: 2.7%.

Attitudes towards smoking was assessed with four items (alpha = 0.81) by asking how they agree with the following statements: 'smoking is relaxing', 'smoking makes sociable', 'smoking brings a good mood', 'smoking is something positive', with response categories range from 0 = 'not true at all' to 3 = 'totally true'. Furthermore, we asked the students whether they had a favorite tobacco advertisement (open format: 0 = 'no', 1 = 'any advertisement named').

Fig. 1. Masked ads for 'Marlboro' and 'Cab' (a beer-mixed drink).

Covariates used to assess social influences on smoking included the smoking status of parents ('Does one of your parents smoke?' 0 = 'no', 1 = 'yes') and the smoking status of the peers ('How many of your friends smoke?' 0 = 'none', 1 = 'some', 2 = 'most', 3 = 'all') for the analysis.

Sociodemographic factors included age, gender, and socioeconomic status. SES of the students was approximated with a combination of student and class teacher ratings: students answered three items of the PISA cultural and social capital assessment [16], asking for the number of books in the household (5-point scale from 0 = 'none' to 4 = 'more than 100') and parenting characteristics ('My parents always know where I am' and 'My parents know other parents from my school'); and class teachers filled out an 11-item school evaluation sheet related to socioeconomic status of their students (examples: 'Most students of the school live in families with financial problems', 'Most students of the school come from underprivileged families', 'Our school has a good reputation'; scale range from 0 = 'not true at all' to 3 = 'totally true', alpha = 0.85; student and teacher ratings correlated r = 0.57, alpha = 0.72).

Rebelliousness and sensation seeking were assessed using four items combined into a single index, with higher scores indicating greater propensity for rebelliousness and sensation seeking (alpha = 0.76) [17]: 'I get in trouble in school', 'I do things my parents wouldn't want me to do', 'I like scary things', and 'I like to do dangerous things'. Response categories were 'not at all like me' (0), 'a little like me' (1), 'pretty much like me' (2), or 'exactly like me (0)'. Also included as covariates were self-reported school performance ('How would you describe your grades last year?', with the response categories 'excellent', 'good', 'average', or 'below average') as well as the German state (Schleswig-Holstein = 0, Hamburg = 1, Brandenburg = 2).

Statistical Analysis

In a first step, we separately regressed attitudes towards the Marlboro ad on each study variable to assess the zero order relationships. In a second step, we regressed attitudes towards the Marlboro ad on all study variables simultaneously. This allowed us to test the association between attitudes and exposure after controlling for age; sex; SES; rebelliousness and sensation seeking; self-reported school performance; German state; having a favorite cigarette ad; exposure to the alcohol ad; as well as own, friend, and parent smoking; and general attitudes towards smoking. All analyses were conducted with Stata 12.

Results

Exposure to the Marlboro Ad

Some 66.5% of the students had never seen the Marlboro ad, 20.4% had seen it 1–4 times, 5.8% 5–10 times, and 7.3% more than 10 times. The correct brand name 'Marlboro' was recalled by 9.0% of those students who never saw this particular ad, 45.8% who saw the ad 1–4 times, 61.6% who saw it 5–10 times, and 68.0% of those who saw it more than 10 times [$\chi^2(3) = 880$; $p < 0.001$].

Association between Exposure and Attitude

Attitudes towards the Marlboro ad were significantly associated with many of the study variables, including exposure to the Marlboro ad, exposure to the alcohol ad, own smoking and friend smoking, attitudes towards smoking, having a favorite cigarette ad, age, rebelliousness/sensation seeking, and study region (table 1).

In the multivariate analysis with simultaneous inclusion of all study variables ($R^2 = 0.119$), the association between positive attitudes and exposure remained sig-

Table 1. Association between study variables and attitudes towards the Marlboro ad

Variable	Zero order association		Adjusted association[1]	
	Std. β-coefficient	95% CI	Std. β-coefficient	95% CI
Marlboro ad exposure	**0.15*****	0.11 to 0.18	**0.09*****	0.05 to 0.13
Control ad exposure (alcohol)	**0.12*****	0.09 to 0.15	0.03	–0.01 to 0.07
Own smoking	**0.19*****	0.16 to 0.23	0.00	–0.06 to 0.05
Friend smoking	**0.15*****	0.12 to 0.19	–0.02	–0.06 to 0.03
Parental smoking (reference: no)	0.03	–0.01 to 0.06	–0.01	–0.05 to 0.03
Favorite cigarette ad (reference: no)	**0.20*****	0.16 to 0.23	**0.10*****	0.06 to 0.14
Smoking attitudes	**0.25*****	0.21 to 0.28	**0.16*****	0.11 to 0.20
Age	**0.09*****	0.05 to 0.12	0.01	–0.03 to 0.05
Sex (reference: female)	0.03	–0.01 to 0.06	–0.03	–0.07 to 0.01
Rebelliousness and sensation seeking	**0.25*****	0.22 to 0.29	**0.17*****	0.13 to 0.21
Socioeconomic status	0.01	–0.02 to 0.04	**0.06****	0.02 to 0.10
Self-reported school performance	0.02	–0.02 to 0.05	**–0.05****	–0.09 to –0.05
German state	**0.06****	0.02 to 0.09	**0.05***	0.01 to 0.08

Bold figures show significant associations. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
[1] Adjusted for all variables in the table.

nificant (table 1). The adjusted mean (95% CI) attitude towards the Marlboro ad was 0.53 (0.50–0.55) for those students who never saw this particular ad, 0.60 (0.57–0.62) for those who saw the ad 1–4 times, 0.66 (0.62–0.71) for those students who saw it 5–10 times, and 0.73 (0.66–0.81) for those who saw it more than 10 times, indicating a dose-response relationship between exposure and liking the ad.

Discussion

This study revealed a positive association between exposure to a cigarette ad and liking it. None of the explicit explanations completely accounted for this association (e.g. that smokers or those with positive attitudes towards smoking are more attentive and receptive of cigarette advertising and like them more). Other study variables were also associated with attitudes towards the ad, but these associations explained only about 40% of the exposure-liking link. In addition, the amount of exposure to an alcohol ad was not related with attitudes towards the Marlboro ad in the adjusted model, indicating that the shown association is not a general ad exposure effect, but specific to the Marlboro ad.

One way of interpreting this result is to assume that we face unmeasured confounding: the reported association is merely an epiphenomenon that can be explained by one or more other variables. This is a sound interpretation that can never be completely ruled out. However, as we have controlled for a number of covariates and cannot term relevant constructs we left out, we think it is more appropriate to first see the association as something meaningful. This interpretation of the result is supported by the fact that there is an established theory that can explain the direct (unmediated) association between exposure and liking – the so called 'mere exposure' effect.

More than 250 experiments have been published during the last 40 years in order to test various aspects of the mere exposure effect [11], according to which repeated unreinforced exposure to a stimulus is sufficient to enhance one's attitude toward the stimulus [18]. In the context of tobacco marketing it might be a useful tool for explaining advertising effects that are not well covered by traditional theoretical models like the theory of reasoned action [7], i.e. 'Why do people engage in behaviors such as smoking they know are harmful and potentially life threatening?'. Rather than assuming people weigh the pros and cons in a reflective way and then make reasoned choices, research on implicit cognitions [19] and on the mere exposure effect may lead to the assumption that the positive effects of advertising for products like cigarettes can also occur without conscious cognitions. 'Implicit preferences' have also been shown in studies that address cue reactions, suggesting that smokers have an attentional bias towards smoking-related cues like advertising images [20, 21].

There are, of course, several limitations to the current study. First, we did not assess any implicit cognitions and are therefore unable to 'show' the mere exposure effect. We only inferred the effect by excluding other explanations. Second, due to the cross-sectional design, the temporal sequence of events cannot be determined; prospective studies are needed to show whether exposure to cigarette advertisements precedes attitudes towards the ads and the actual smoking behavior. Third, our measure of advertising exposure and attitudes towards the ad consists only of one specific Marlboro ad. Finally, exposure to this ad was self-reported, and may be subject to reporting bias, although we tried to validate this measure by using a cued recall measure of the masked advertisement.

Despite these limitations, this preliminary investigation brings a concept into this research field which may have the potential to explain parts of the variance of the association between exposure to tobacco advertisements and youth smoking initiation, namely the mere exposure effect. Hopefully, this paper will inspire future research on the possible mediating effect of the mere exposure effect on the well-documented association between tobacco marketing and teen smoking.

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Disclosure Statement

The authors report no conflicts of interest.

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