

Priming effect of antismoking PSAs on smoking behaviour: a pilot study

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ABSTRACT

Objective Social marketing is commonly proposed to counteract advertising and other messages that promote unhealthy products. However, public service campaigns can also 'boomerang' or ironically increase the unhealthy behaviours they are designed to discourage. The present study examined whether antismoking public service announcements (PSAs) could increase smoking behaviour immediately following exposure.

Methods In an experimental study, 56 smokers were randomly assigned to watch a short television segment with a commercial break that included either (1) a Philip Morris 'QuitAssist' PSA; (2) a Legacy 'truth' antismoking PSA; or (3) a control PSA. Smoking behaviour was assessed during a short break immediately following television viewing.

Results Participants who saw the Philip Morris antismoking PSA were significantly more likely to smoke during a break (42%) compared with participants in the control condition (11%), and participants in the 'truth' condition were marginally more likely to smoke (33%). These differences could not be explained by factors such as mood or level of addiction, and effects occurred outside of participants' conscious awareness.

Conclusions These findings provide preliminary evidence that antismoking campaigns could ironically increase immediate smoking behaviours among smokers. The long-term benefits of proven public health campaigns, including 'truth,' are likely to outweigh any short-term boomerang effects. However, industry-sponsored messages in which companies have an economic incentive to increase consumption behaviours should be treated with scepticism and evaluated independently.

Social marketing campaigns, including public service announcements (PSAs), are often proposed to counteract media messages that promote tobacco, alcohol and junk food consumption.¹ However, social marketing designed to discourage consumption of an unhealthy substance does not always produce the intended effect. A review of media campaigns to limit alcohol consumption concludes that 'dogmatic or authoritative messages' can 'boomerang' by triggering a reactance response, especially among adolescents and young adults, and lead to increased alcoholic beverage consumption.² Studies of exposure to warning labels on cigarettes also demonstrate potential ironic effects on attitudes, craving and smoking uptake.³⁻⁴ One study of antismoking advertisements found that ads with weak arguments that depicted actual smoking behaviours increased smoking urge.⁵

Tobacco industry-sponsored antismoking campaigns also could produce ironic effects. An

analysis of tobacco company prevention campaigns found that exposure to parent-targeted (but not youth-targeted) advertisements by high school students was associated with greater likelihood of having smoked in the past 30 days and stronger intentions to smoke in the future.⁶ Philip Morris' youth-targeted campaign ('Think. Don't smoke'.) admonished young people not to smoke, but increased adolescent intentions to start smoking in the following year.⁷ Although that campaign was discontinued, Philip Morris launched another public service campaign entitled 'QuitAssist' in 2004.⁸ This multimedia campaign advertises the company's online resources to help smokers quit. Philip Morris has used PSAs previously to improve its corporate image,⁷⁻⁹ but examination of the 'QuitAssist' PSAs reveals another potential benefit for the company. The ads feature visual and auditory cues (eg, 'There is no *safe cigarette*', '*Cigarette smoking is addictive*' (emphasis added)) that could unconsciously prime smoking.

Priming research demonstrates that subtle cues in the environment, including semantic primes, can automatically increase the perceiver's likelihood to behave in line with those cues.¹⁰⁻¹² Advertisements for junk food¹³⁻¹⁴ and depictions of alcohol consumption¹⁵ prime immediate consumption of those substances. In addition, the unconscious mind disregards negations when perceiving semantic primes, for example, automatically processing the words 'do not smoke' as 'smoke'.¹⁶⁻¹⁸ A recent study demonstrated that exposure to 'no smoking' signs ironically primes motivation to smoke.¹⁹ Therefore, the Philip Morris antismoking ads could trigger an immediate inclination to consume cigarettes, another potential boomerang effect of social marketing. As priming effects occur outside of conscious awareness, the perceiver cannot use deliberate strategies to counteract their influence.²⁰

The following experiment tests whether exposure to the Philip Morris 'QuitAssist' campaign primes immediate smoking behaviour as predicted by the semantic priming literature. However, any reminder of smoking or cigarettes, even antismoking PSAs that are effective in the long-term, could prime short-term smoking behaviour. Therefore, this research also examines the immediate effect of exposure to an American Legacy Foundation 'truth' PSA to evaluate the generalisability of these priming effects. It is the first to evaluate effects of PSAs on actual smoking behaviour in a naturalistic setting designed to approximate real world exposure.

DATA AND METHODS

Potential participants were recruited among students at a state college in the Northeast and

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Brief report

screened using an online health behaviour questionnaire. Those who reported having smoked at least one cigarette during the previous day were invited to participate.

To mask its true purpose, participants were told that the study examined the effects of television on mood and health behaviours and were not aware of selection based on their smoking status. To provide a more realistic exposure environment, the PSAs were embedded within a television segment that also included other advertisements. Participants first completed a Positive and Negative Affect Scale (PANAS) mood assessment²¹ and then watched the television programme on a computer screen in a room by themselves. Three versions of a 12-min segment of 'Whose Line is it Anyway?' were used. Each included three 30 s commercials and one PSA inserted during a commercial break: a PSA supporting youth baseball (control condition); the 'body bags' version of the 'truth' campaign²²; and a 'QuitAssist' PSA.⁸ The 'truth' PSA contains just two visual and one audio mention of 'tobacco,' whereas the 'QuitAssist' PSA contains 12 visual and audio mentions of 'smokers/smoking' and 'cigarettes' (see Appendix). Neither PSA contains visual smoking cues, but they differ in emotional valence and message about tobacco companies (negative vs positive) and target audience (youth non-smokers vs current adult smokers). The television segment and all other commercials, including their placement, were identical in all conditions and contained no health-related messages. Participants were randomly assigned to condition and viewed the segment on a computer screen in a room by themselves.

After viewing the programme, participants completed a second mood assessment. The experimenter then informed participants that they would take a 10-min break to assess their memory of the television programme after a short delay. Participants were told that they could leave during the break or they could stay and help another researcher pilot test some short video clips (no additional compensation was offered). The researcher did not suggest a specific location for the break if participants chose to leave. The building had no indoor smoking area, but students commonly smoked near the building entrance. After the break, participants completed two questionnaires. The first asked about various health behaviours, including when they had last smoked a cigarette with an option of 'less than 15 min ago'. The second assessed participants' unaided recall of the commercials and PSA and asked participants to indicate their break activity. These questions functioned as self-report measures of smoking behaviour for participants who left the experimental session during the break.

The experimenter then conducted a funnelled debriefing to probe for awareness of the experimental hypothesis and potential effect of the PSA on smoking behaviour.²³ Finally, participants completed the Fagerstrom Test for Nicotine Dependence (FTND).²⁴ Participants received class credit or \$15 for their participation.

RESULTS

In total, 56 smokers, ages 18–45 years ($M=20.8$) participated (37 women). Participants' age and gender did not differ between conditions (all $ps>0.85$). Participants exhibited low levels of nicotine addiction (Fagerstrom Test for Nicotine Dependence = 1.03, $SD=0.29$). As hypothesised, participants in the 'QuitAssist' condition were significantly more likely to smoke during the break (42%) as compared with participants in the control (11%), $\chi^2(1, N=38)=4.89, p=0.03$ (see figure 1). Participants in the 'truth' condition were marginally more likely to smoke (33%), $\chi^2(1, N=37)=2.84, p=0.09$. Smoking did not

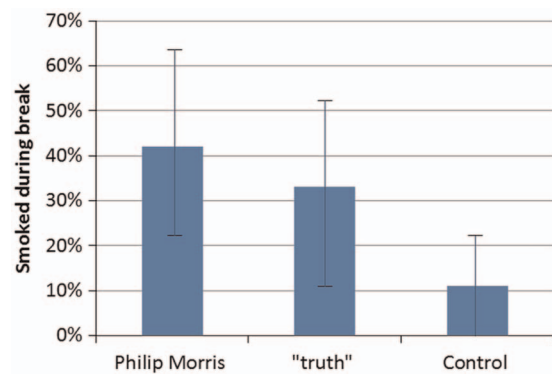


Figure 1 Percentage of participants who smoked following exposure to public service announcements.

differ between the two antismoking conditions, $\chi^2(1, N=37)=0.30, p=0.82$.

The following analyses compare the control to the combined antismoking conditions. An analysis of variance (ANOVA) of addiction score by condition revealed no significant differences in level of addiction between participants in the control ($M=0.96, SE=0.49$) and antismoking ($M=1.11, SE=0.22$) conditions nor between those who smoked ($M=1.11, SE=0.50$) and did not smoke ($M=0.96, SE=0.21$), and the interaction was not significant (all $ps\geq 0.78$). Reported mood prior to viewing the programme and change in mood following viewing did not differ between conditions (all $ps\geq 0.63$). Participants who smoked during the break did report a slight mood improvement after viewing the programme ($M=0.08, SD=0.14$), whereas non-smoking participants reported no change ($M=0.01, SD=0.11$); the difference approached significance, $t(54)=1.63, p=0.11$.

Unaided, 95% and 83% of participants recalled the 'QuitAssist' and 'truth' PSAs, respectively, significantly more than the 42% unaided recall in the control, $\chi^2(2, N=56)=14.80, p=0.001$. However, no one correctly guessed the purpose of the study. When asked if the commercials affected them, just one participant indicated that a PSA (Philip Morris) made them want a cigarette. Therefore, there was a lack of awareness of the direct effect of the PSAs on smoking behaviour.

DISCUSSION

As predicted, exposure to the 'QuitAssist' antismoking PSA increased immediate smoking behaviour. The motives for the Philip Morris campaign are questionable. As found with its previous 'antismoking' campaigns, the company's true purpose may have been to increase cigarette sales by encouraging smoking and/or enhancing its image.^{7–9} However, exposure to the 'truth' PSA had a similar effect. This PSA was chosen as a comparison because it differs markedly from the 'QuitAssist' PSA in nearly every dimension, and the campaign has been tested extensively and shown to discourage long-term smoking among adolescents and adults.^{7–25–28} Therefore, these results suggest that almost any reminder of smoking, tobacco or cigarettes could automatically trigger an immediate desire to smoke among smokers.

Additional research is required to replicate these effects and determine the mechanisms involved. Of note, participants did not guess the purpose of the study, indicating that they were

affected beyond their conscious awareness. Unconscious processing of antismoking messages could explain why this study also showed effects of a strong antismoking message (ie, 'truth') when only weak messages with visual smoking cues affected reported smoking urges in a previous study.⁵ In that study, participants knew that researchers were measuring smoking urges and thus could have used deliberate strategies to counteract the less powerful cues. Additional studies that compare effects of PSAs that differ on specific message characteristics (eg, positive vs negative emotional valence, type of smoking cue, target audience) and level of media support for the campaign would provide additional insights into the mechanisms for these effects. Further research also should examine whether participants' total cigarette consumption increased or whether they simply smoked their usual cigarette at an earlier time.

The present study does have limitations to be addressed in future research. Participants could not know that the study involved smoking, but recruiting participants without advertising for smokers was difficult due to low incidence in the population. Also, the sample was college-educated, disproportionately female and relatively young. Studies with a larger, more representative sample, including highly addicted smokers, would be beneficial. However, this sample was affected despite low levels of addiction, and level of addiction did not moderate the effects; therefore, smokers with higher levels of addiction also would likely be affected. In addition, researchers did not assess participants' exposure to other smoking cues prior to arriving at the study, familiarity with the PSAs, nor time since last cigarette (for those who smoked during the break). As participants were randomly assigned to condition, these factors should not have differed between conditions. However, future studies could include such measures to confirm random assignment. Further, smoking behaviour during the break was self-reported and subject to potential misreporting, although this risk was minimised because most non-smoking participants stayed in the room during the break. Smoking during the break also was assessed by two different measures, and all reports were consistent. Finally, this experiment demonstrates the effects of a single exposure and cannot be used to infer cumulative effects from repeated exposure.

These findings provide preliminary evidence that exposure to antismoking campaigns could ironically increase immediate smoking behaviours among smokers. However, public health campaigns are designed to influence long-term behaviours; and campaigns such as 'truth' have been shown to effectively reduce initiation of smoking among youth and to promote quitting among adults.^{28–30} These long-term benefits of proven social marketing campaigns are likely to outweigh any immediate boomerang effects. Yet the current findings suggest that antismoking messages may not always produce positive outcomes. Public health researchers might consider evaluating potential priming effects of anticonsumption campaigns by measuring short-term outcomes immediately following exposure, such as craving, smoking urge and/or actual smoking behaviour. This information would enable cost-benefit analyses of short-term negative versus long-term positive effects, as well as reinforce the need for continued funding of public health campaigns to ensure sufficient reach and duration to achieve long-term objectives.²⁹ In particular, industry-sponsored messages, such as tobacco company antismoking campaigns that are not associated with improvements in long-term smoking outcomes,^{28 29} should be treated with scepticism and independently evaluated for ironic effects on unhealthy consumption.

What this paper adds

- ▶ Previous research has demonstrated that exposure to advertising and other media can prime immediate snack food and alcohol consumption. The priming literature also suggests that media messages to 'not smoke' could be processed unconsciously as cues to 'smoke', providing one potential mechanism for boomerang effects of social marketing designed to reduce unhealthy consumption.
- ▶ This experiment provides preliminary evidence that exposure to antismoking PSAs, presented in a naturalistic setting, could prime immediate smoking behaviours.
- ▶ These findings raise additional concerns about social marketing campaigns, such as those sponsored by tobacco companies, which have not been shown to improve public health outcomes in the long-term.

Contributors J LH designed the study, supervised data collection and analysis, and wrote the initial manuscript. MP recruited participants, administered data collection, analysed the data, and provided substantial feedback on the manuscript. JAB conceived of the study, provided input on study design and provided substantial feedback on the manuscript.

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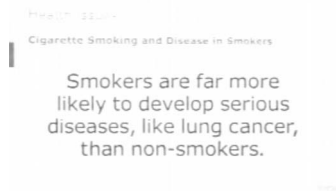
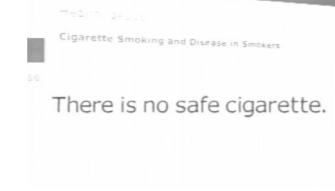
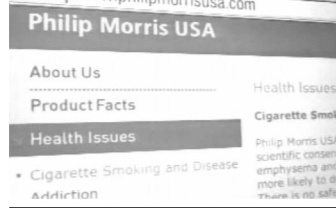
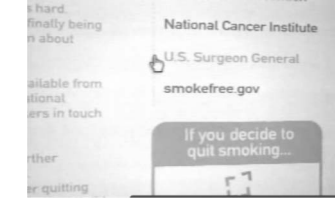
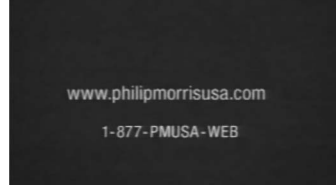
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Brief report

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Appendix Philip Morris 'QuitAssist' public service announcement

Video	Audio	Video	Audio
			Cigarette smoking is addictive and causes serious diseases.
	Smokers are far more likely to develop serious diseases, like lung cancer, than non-smokers.		There is no safe cigarette.
	At Philip Morris USA.com, you can find this and other information on the serious health effects of smoking		And links to reports from public health authorities, including links to sites that can help smokers quit
	For more information, visit Philip Morris USA.com		

Legacy 'truth' body bags public service announcement

Video	Audio	Video	Audio
 <p>Outside a major tobacco company.</p>			
	<p>Excuse me. We've got a question</p>		<p>Do you know how many people tobacco kills every day?</p>
	<p>You know what? We're going to leave this here for you</p>		<p>So you can see what 1200 people actually look like</p>



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