

## Research Report

# Smoking in Movies, Implicit Associations of Smoking With the Self, and Intentions to Smoke

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**ABSTRACT**—We examined whether identifying with a film character who smokes increases implicit associations of the self with smoking. Undergraduate men were randomly assigned to view film clips in which the male protagonist either smoked or did not smoke. We measured subsequent levels of self-smoking associations using a reaction time task, as well as self-reported beliefs about smoking and smokers. Greater identification with the smoking protagonist predicted stronger implicit associations between the self and smoking (for both smokers and nonsmokers) and increased intention to smoke (among the smokers). Stronger implicit self-smoking associations uniquely predicted increases in smokers' intentions to smoke, over and above the effects of explicit beliefs about smoking. The results provide evidence that exposure to smoking in movies is causally related to changes in smoking-related thoughts, that identification with protagonists is an important feature of narrative influence, and that implicit measures may be useful in predicting deliberative behavior.

Exposure to smoking in movies is a potential influence on youths' smoking behavior. Cross-sectional (Sargent et al., 2005) and longitudinal (Dalton et al., 2003) surveys have shown that greater exposure to smoking in movies predicts increased likelihood of trying smoking, even after accounting for a wide range of potential confounding factors. A few experimental studies have supported a causal argument, revealing that exposure to movies in which smoking takes place predicts more favorable attitudes toward smokers (Gibson & Maurer, 2000) and increased self-reported likelihood of smoking (Hines, Saris,

& Throckmorton-Belzer, 2000; Pechmann & Shih, 1999). However, the mechanisms underlying these effects are poorly understood, and until recently (Tickle, Hull, Sargent, Dalton, & Heatherton, 2006), accounts of these mechanisms were entirely speculative.

In this article, we report experimental data that speak to this debate, while advancing understanding of basic social psychological issues. Among nonsmokers, similarity between one's self-concept and one's image of a smoker predicts trying smoking (Aloise-Young, Hennigan, & Graham, 1996). Similarly, among youth who have never smoked, liking movie stars who smoke and considering oneself to be similar to peers who smoke are associated with intentions to smoke and subsequent smoking initiation (Tickle et al., 2006).

More generally, researchers interested in the persuasive impact of narratives suggest that greater identification with characters increases persuasion (e.g., Green & Brock, 2000; Slater & Rouner, 2002), but the determinants of identification are not entirely certain. For example, identification is not mere similarity, but similarity may be an important precondition for identification under some circumstances. In one study, high school students read two stories, one with a male protagonist and the other with a female protagonist; boys identified only with the male, whereas girls identified with both characters (Oatley, 1996). Oatley (2002) suggested that identification requires a willingness to "make this leap into another mind" (p. 62), and that "fiction always derives from a wish by an author and reader to be somewhere else" (p. 41); recent research reveals that feeling transported into a narrative (i.e., being psychologically engaged by it) predicts increased persuasiveness of that narrative (Green & Brock, 2000). We recently proposed that the extent to which one is transported by narratives (including movies) varies across individuals, and we have validated an individual difference measure of this propensity (Dal Cin, Zanna, & Fong, 2004). We expect that individuals who are more transportable will be more likely to identify with protagonists.

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Our main objective in this study was to examine identification with a movie character who smokes and the influence such identification has on one's own self-concept. Given that smoking is considered socially undesirable in North America, we expected that our participants, particularly nonsmokers, might have difficulty reporting changes in smoking self-concept. To overcome this possible limitation, we administered not only traditional explicit (self-report) measures, but also a less-deliberative, implicit measure of the association of smoking with the self. This circumvented the potential influences of social-desirability biases inherent in explicit measures. As a secondary goal, we also wished to test our hypothesis that individuals who are more transportable will be more likely to identify with protagonists.

## METHOD

### Participants

Participants were 52 men (mean age = 19.7 years) in introductory psychology courses at the University of Waterloo ( $n = 31$ ) and at Central Michigan University ( $n = 21$ ); 26 had never smoked (i.e., never puffed a cigarette), and 26 smoked at least monthly (20 were daily smokers). All received partial course credit for participating.

### Materials and Procedure

At the beginning of the term, students completed a mass testing booklet containing multiple questionnaires, including explicit measures of smoking status and of beliefs and intentions regarding smoking, as well as the Transportability Scale, which assesses general disposition to psychologically engage with a narrative (Dal Cin et al., 2004). Later that term, participants were recruited for a "Consumer Products Survey," ostensibly consisting of two studies, one evaluating a film and another evaluating consumer products. Participants were randomly assigned to watch a film clip in which the main character either smoked (smoking condition) or did not smoke (control condition). Both clips were continuous 36-min segments from the movie *Die Hard* (McTiernan, 1988). In both clips, the protagonist, John McClane (portrayed by Bruce Willis), was battling alone against terrorists and "efficiently dispatched" many of them.

Following the clip, participants reported how much they identified with the character (John) and their evaluation of him. They also answered some questions about the film. They were then taken to a nearby computer lab for the "second" study. They reported how likely it was that they would smoke cigarettes in the coming month, whether they believed they might smoke cigarettes more often in the future, their perception of the image portrayed by people smoking cigarettes, whether they would be less likely to be friends with someone who smokes cigarettes than with someone who does not smoke cigarettes, and their

estimate of the prevalence of smoking in the population (they also answered items regarding four distractor products: snack food, fast food, beer, and soft drinks). In addition, participants completed a computer-based Implicit Association Test (IAT) designed to measure automatic associations between "self" and "smoking." For this reaction time task, they categorized pictures (some with smoking paraphernalia and some without) as "smoking" or "no smoking" and stimulus words (e.g., *me*, *mine*; *they*, *them*) as self-relevant or not self-relevant (Swanson, Rudman, & Greenwald, 2001). Following the completion of the IAT and surveys (the order of which was counterbalanced), participants were fully debriefed.

## RESULTS

### Preliminary Analyses

As in prior research (Gibson & Maurer, 2000), participants' ratings of the control and smoking videos were virtually identical.<sup>1</sup> The Transportability Scale had good reliability (Cronbach's  $\alpha = .83$ ) and significantly predicted story-specific identification with the hero, John,  $r = .31$ ,  $p_{\text{rep}} = .96$ . Identification with John (scored on a 9-point scale) was reliable (Cronbach's  $\alpha = .79$ ) and did not differ across clips or smoking status (overall mean = 5.32). Analysis of the character-evaluation items ( $\alpha = .64$ ) revealed that responses did not differ across film clips, but that John was rated more positively by participants who identified with him more (overall mean = 5.42),  $\beta = .27$ ,  $t(48) = 1.97$ ,  $p_{\text{rep}} = .91$ .

### Statistical Analysis

For all outcomes (beliefs, implicit associations, and intentions), hierarchical moderated multiple linear regression analyses were conducted. The main effect of smoking status was entered on the first step, main effects of film clip and identification with John were entered on the second step, and the interaction of film clip and identification was entered on the final step. For explicit beliefs about smoking and intentions to smoke, pretest scores (from the mass testing booklet) were also included in the regression. Higher-order interactions with smoking status were tested but found to be nonsignificant; we report only the simplified models.

### Smoking-Related Thoughts

#### *Explicit Beliefs About Smoking*

Compared with nonsmokers, smokers thought the image portrayed by people smoking was less negative and were less likely to reject smokers as friends, but smokers and nonsmokers did not differ in their estimates of smoking prevalence (see Table 1).

<sup>1</sup>The control film clip was rated as more violent than the smoking film clip, but ratings of violence and other features of the movie's quality were uncorrelated with the dependent measures.

**TABLE 1**

*Mean Scores on Items Assessing Explicit Beliefs About Smoking as a Function of Participants' Smoking Status*

Item	Nonsmokers	Smokers
The image portrayed by people smoking cigarettes is . . . (from 1, <i>very negative</i> , to 7, <i>very positive</i> )	1.54 <sub>a</sub> (1.07)	2.69 <sub>b</sub> (1.67)
I would be less likely to be friends with someone who smokes cigarettes than someone who does not smoke cigarettes. (from 1, <i>disagree very much</i> , to 7, <i>agree very much</i> )	4.00 <sub>a</sub> (2.15)	2.04 <sub>b</sub> (1.54)
In your estimation what proportion of the overall population smokes cigarettes?	50.00 <sub>a</sub> (14.56)	47.69 <sub>a</sub> (17.22)

**Note.** Standard deviations are given in parentheses. Within a row, means that do not share subscripts differ at  $p_{\text{rep}} > .97$ .

Viewing the film clip portraying smoking did not change the image of smokers, willingness to befriend a smoker, or prevalence estimates. Similarly, identifying with John had no effect on these measures. Interactions between film clip and identification with John were also nonsignificant.

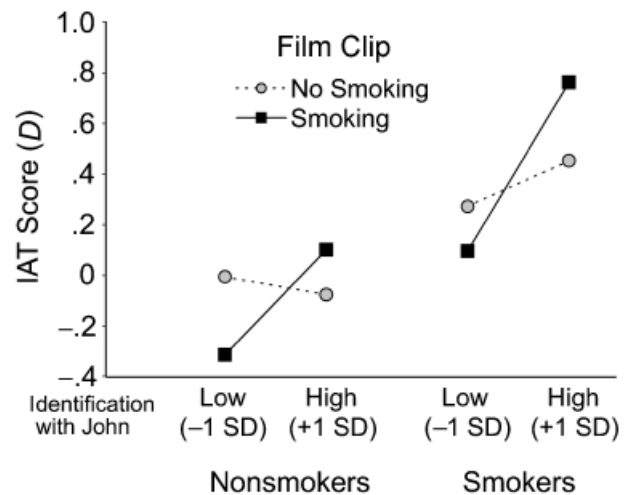
#### *Implicit Self-Smoking Associations*

The IAT was scored using Greenwald, Nosek, and Banaji's (2003) revised scoring method. Increasingly positive scores represent greater tendency to associate the self with smoking; increasingly negative scores represent greater tendency to associate the self with no smoking. As expected, smokers ( $M = .42$ ,  $SD = .48$ ) had more positive IAT scores than nonsmokers ( $M = -.08$ ,  $SD = .50$ ),  $t(50) = 3.67$ ,  $p_{\text{rep}} > .99$ ,  $d = 1.08$ . There was also a significant interaction between identification and film clip,  $t(47) = 2.05$ ,  $p_{\text{rep}} = .92$ ,  $d = 0.58$ . The more participants identified with John, the more they associated the self with smoking, but only when they viewed the clip in which John was a smoker: smoking condition,  $t(47) = 2.70$ ,  $p_{\text{rep}} = .97$ ,  $d = 0.77$ ; control condition,  $t(47) < 1$ . Smoking status did not moderate this effect, three-way  $t(44) < 1$ ; identifying with John when he smoked enhanced the association between the self and smoking for nonsmokers just as much as it did for smokers, as shown in Figure 1.

#### **Smoking-Related Intentions**

Nonsmokers' responses to the measures of behavioral intentions had no variability; all nonsmokers reported that it was unlikely they would smoke in the coming month and strongly disagreed that they might smoke more in future.

For smokers ( $n = 26$ ), we combined the likelihood of smoking in the coming month and intentions to smoke more in future into a single measure of smoking intention. Exposure to the film clip portraying smoking and identification with John were not associated with changes in intention to smoke. However, there was a significant interaction between film clip and identification with John,  $t(21) = 2.09$ ,  $p_{\text{rep}} = .92$ ,  $d = 0.84$ . Tests of simple slopes revealed that identification predicted increased intention to



**Fig. 1.** Implicit identification of the self with smoking as a function of smoking status, film clip viewed (smoking or no-smoking control), and identification with the protagonist (John). IAT = Implicit Association Test.

smoke in the smoking condition,  $t(21) = 2.11$ ,  $p_{\text{rep}} < .92$ ,  $d = 0.85$ , but not in the control condition,  $t(21) = -0.99$ , n.s.

#### **Relation Between Smoking-Related Thoughts and Smoking Intention**

Finally, for the smokers' data, we conducted a regression analysis predicting change in smoking intention using responses to the three explicit-belief items and IAT score simultaneously. The IAT was a significant, unique predictor of changes in smoking intention,<sup>2</sup>  $\beta = .55$ ,  $t(20) = 3.30$ ,  $p_{\text{rep}} = .98$ , whereas none of the belief items uniquely predicted intention ( $\beta$ s =  $-.27$  to  $.17$ ,  $p_{\text{rep}} < .85$ ). Thus, stronger self-smoking associations were associated with increases in intention to smoke.

<sup>2</sup>IAT scores are in fact difference scores between associations of smoking with the self and associations of no smoking with the self. Scores for these two associations were correlated; their unique relations to smoking intention were equal in magnitude, but opposite in sign (cf. Blanton, Jaccard, Gonzales, & Christie, 2006).

## DISCUSSION

For both smokers and nonsmokers, identifying with the protagonist led to greater implicit association of smoking with the self, but only when the protagonist smoked. Thus, this study provides experimental evidence that exposure to smoking in a movie has an influence on smoking-related thoughts, specifically, implicit associations between smoking and the self. This implicit association seems consequential, given that among smokers it was a significant, unique predictor of increased intention to smoke. If such associations increase the likelihood of smoking, then this study provides preliminary evidence of a mechanism through which smoking in movies exerts its effects.

Recent theorizing on impulsive and reflective mental systems (Strack & Deutsch, 2004) highlights the role of implicit associations in the execution of behavior. Perceptual input (e.g., viewing smoking) may activate behavioral schemata in the impulsive system; these schemata can influence behavior, especially when reflective capacity is limited. Such activation can also influence how people make so-called rational, deliberative decisions by altering the information that is salient (e.g., Gregory, Cialdini, & Carpenter, 1982). This account is consistent with implicit-cognition theories of health behavior (e.g., Stacy, Newcomb, & Ames, 2000) positing that particular behavioral options are made more salient by strengthening their association with other concepts in memory; indeed, activation of implicit expectancies about alcohol and marijuana predicts subsequent use of these substances (Stacy, 1997). Activating associations between the self and smoking could have serious implications for smoking behavior, in that nonsmokers who identify more with smoking are at greater risk for subsequent smoking than are nonsmokers who identify less with smoking (e.g., Aloise-Young et al., 1996; Tickle et al., 2006), and smokers identifying more strongly with smoking tend to be less likely to quit (Falomir & Invernizzi, 1999). Future experimental studies will be needed to determine the range of the effects of exposure to smoking in movies on smoking behavior; understanding the mechanisms underlying these effects will inform debates about appropriate interventions and policy decisions.

We note that our sample was composed of university men and acknowledge that our results might not extend to women or other groups. However, given prior research demonstrating that exposure to smoking in movies affects adult men and women (Hines et al., 2000) and adolescents (Pechmann & Shih, 1999), and given research showing narrative persuasion in both men and women (Dal Cin et al., 2004; Green & Brock, 2000), we expect the results will generalize to individuals in other groups when faced with protagonists with whom they identify. By examining a sample older than the samples in most previous research on the effects of smoking in movies, we have demonstrated that these effects are not necessarily constrained to “impressionable” adolescents. Although it would have been fanciful to believe that nonsmokers would take up smoking upon

viewing a single film clip, identifying with a smoking protagonist did have a measurable effect on nonsmokers’ implicit associations between smoking and the self, and such associations may serve to influence beliefs and attitudes toward tobacco-control policies (e.g., acceptance of public smoking bans). Tobacco marketing and sponsorship often associates tobacco products with positive events, activities, and public figures, and the prevailing conceptualization of these strategies is that they serve to “normalize” smoking among smokers and nonsmokers alike (Ling & Glantz, 2002).

More generally, our results suggest that identifying with characters is an important feature of narrative influence (one that is predicted by dispositional tendencies to become transported by a narrative) and provide causal evidence that exposure to behaviors in film can exert subtle influence, supporting the theoretical prediction that the influence of stories can be relatively “under the radar” (Dal Cin et al., 2004). Indeed, recent research suggests that subtle persuasive attempts built on the association of concepts (e.g., pairing smoking with a positive character) may have more effect on implicit than on explicit attitudes, whereas persuasive attempts built on propositional reasoning may have more effect on explicit than on implicit attitudes (Gawronski & Bodenhausen, 2006; Gawronski & Strack, 2004; Gibson, 2007).

In this broader context, one can envision a wide variety of behaviors that transportability and identification with a protagonist might influence; the enactment of good-deeds pyramid schemes in the real world after the publication of *Pay it Forward* (Ryan Hyde, 2000) is a case in point (see Ryan Hyde, n.d.). Similarly, transportability and identification with characters may prove to be important factors in determining why some individuals (and not others) enact violent behaviors they observe in the media. Narratives are ubiquitous, and history reveals that they can be powerful. The current results suggest that under certain conditions (i.e., when individuals identify with a character), narratives may be able to change (or at least selectively activate) implicit associations, with potentially insidious consequences.

**Acknowledgments**—This research was supported by a research grant from the Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada; by a Canadian Institutes of Health Research (CIHR) Canada Graduate Scholarship; and by a CIHR Strategic Training Fellowship in Tobacco Research (S.D.). It was also supported by a Social Sciences and Humanities Research Council grant (M.P.Z.) and by a Lyle S. Hallman Institute Fund grant (G.T.F.). We thank Jane Swanson, Laurie Rudman, and Anthony Greenwald for providing the photos used for the Implicit Association Test, Carrie Choy and Sarah Young for assistance in data collection, and Brian Nosek, Timothy Wilson, and Linda Titus-Ernstoff for comments on a previous version of this article.

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(RECEIVED 9/20/06; REVISION ACCEPTED 11/13/06;  
FINAL MATERIALS RECEIVED 11/29/06)