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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 smoking film character 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, along with self-reported beliefs about smoking and smokers. 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 association uniquely predicted increases in smokers' intentions to smoke, over and above explicit beliefs about smoking. The results provide evidence that exposure to smoking in movies is causally related to changes in smoking-related cognitions, that identification with protagonists is an important feature of narrative influence, and that implicit measures may be useful in predicting deliberative behavior.

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Exposure to smoking in movies is a potential influence on youth smoking behavior. In cross-sectional (Sargent et al., 2005) and longitudinal (Dalton et al., 2003) surveys, 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 containing smoking 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 movie smoking exposure effects are poorly understood and until recently (Tickle, Hull, Sargent, Dalton, & Heatherton, 2006) were entirely speculative.

In the current article, we report experimental data that speaks to the movie smoking 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 impact (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 only identified with the male, whereas girls identified with both characters (Oatley, 1996). Oatley (2002) suggests

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., 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 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.

Our main objective in this study was to examine identification with a character and the influence it has on one’s own self-concept in the domain of smoking in the movies. 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, along with traditional explicit (self-report) measures, we used a less-deliberative, implicit measure of the association of smoking with oneself. This circumvented the potential influences of social desirability biases inherent in the sole use of explicit measures. As a secondary goal, we also wished to test our hypothesis that those who are more transportable will be more likely to identify with protagonists.

Method

Participants

Participants were 52 men ($M_{\text{age}} = 19.7$ years) in introductory psychology at the University of Waterloo ($n = 33$) 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 term, students completed a mass testing booklet containing multiple questionnaires, including explicit measures of smoking status, beliefs and intentions regarding smoking, and the Transportability Scale assessing 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 two studies, one on evaluating a film and another on evaluating consumer products. Participants were randomly assigned to watch either a film clip in which the main character smokes (Smoking condition) or does not smoke (Control condition). Both clips were continuous 36-minute segments from the movie *Die Hard* (McTiernan, 1988). In both clips, the protagonist, John McClane (portrayed by Bruce Willis) is battling alone against terrorists and ‘efficiently dispatches’ many of them.

Following the clip, participants reported how much they identified with the character (John), their evaluation of him, and 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 may 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 someone who does not smoke cigarettes, and an estimate of smoking prevalence in the population (along with items regarding 4 distracter products: snack food, fast food, beer, and soft drinks). Participants also completed a computer-based Implicit Association Test (IAT) designed to measure automatic associations between “self” and “smoking” by having participants categorize pictures (some with smoking paraphernalia, some without) as smoking or no smoking and stimulus words (e.g., me, mine; they, them) as self 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

Replicating prior research (Gibson & Maurer, 2000) participants' ratings of the control and smoking videos were virtually identical.¹ 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, $M_{\text{overall}} = 5.32$. Analysis of the character evaluation items (Cronbach's $\alpha = .64$) revealed that they did not differ across film clips, but that John was rated more positively by participants who were more identified with him, $M_{\text{overall}} = 5.42$, $\beta = .27$, $t(48) = 1.97$, $p_{\text{rep}} = .91$.

Statistical analysis

For all outcomes (beliefs, implicit association, and intention), 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 on the second step, and the interaction of film clip and identification 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 cognitions

Explicit beliefs about smoking. Compared to nonsmokers, smokers thought the image portrayed by people smoking was less negative and were less likely to reject smokers as friends,

but did not differ in their estimates of smoking prevalence (See table). Viewing the smoking film clip 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—identifying with the smoking John did not change images, willingness to befriend smokers, or prevalence estimates.

Implicit self-smoking association. The IAT was scored using Greenwald, Nosek, and Banaji's (2003) revised scoring method. Positive scores represent greater tendency to associate self with smoking; increasingly negative scores represent greater tendency to associate 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, $t_{\text{smoking condition}}(47) = 2.70$, $p_{\text{rep}} = .97$, $d = 0.77$; $t_{\text{control condition}}(47) = 0.03$, *ns*. Importantly, smoking status did not moderate this effect, $t_{3\text{-way}}(44) = 0.82$, *ns*—the smoking clip enhanced the association between the self and smoking for nonsmokers just as much as it did for smokers (Figure).

Smoking-related intention

Nonsmokers' responses to the behavioral intentions measures had no variability; all nonsmokers reported it was unlikely that they would smoke in the coming month and strongly disagreed they may 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 film smoking and identification with John were not associated with changes in intention. However, there was a significant interaction between exposure to film smoking and identification with John, $t(21) = 2.09$, $p_{\text{rep}} = .92$, $d = 0.84$. Tests of simple slopes revealed identification predicted increased intention following the smoking clip, $t(21) = 2.11$, $p_{\text{rep}} < .92$, $d = 0.85$, but not following the control clip, $t(21) = -.99$, *ns*.

Relation of smoking-related cognitions with smoking intention

Finally, we conducted a regression analysis predicting change in smoking intention using the three explicit smoking beliefs and IAT score simultaneously. The IAT was a significant, unique predictor of changes in smoking intention,² $\beta = .55$, $t(20) = 3.30$, $p_{\text{rep}} = .98$, whereas none of the beliefs uniquely predicted intentions (β s = $-.27$ to $.17$, $p_{\text{rep}} < .85$). Therefore, stronger self-smoking associations were associated with increases in intention to smoke.

Discussion

For both smokers and nonsmokers, identifying with the protagonist led to greater implicit association of smoking with the self, but only when he smoked. Thus, we find experimental evidence that exposure to movie smoking has an influence on smoking-related cognitions, 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 we have preliminary evidence of a mechanism through which movie smoking 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, which can influence behavior, especially when reflective capacity is limited. Such activation can also

influence how we make so-called rational, deliberative decisions by altering the information that is salient (e.g., Gregory, Cialdini, & Carpenter, 1982). This 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 predict subsequent use of these substances (Stacy, 1997). This has potentially serious implications for smoking behavior, in that nonsmokers identifying with smoking are at greater risk for smoking uptake (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). Additional experimental studies determining the range and mechanisms underlying the effects of exposure to smoking in movies on smoking behavior will inform debates as to 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 effects of movie smoking exposure on adult men and women (Hines et al., 2000) and on adolescents (Pechmann & Shih, 1999), and research on narrative persuasion in which both men and women were influenced (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 an older sample than most previous research on movie smoking effects, we demonstrate that these effects are not necessarily constrained to “impressionable” adolescents. Although it is fanciful to believe that nonsmokers would take up smoking upon viewing this single film clip, identifying with a smoking protagonist did have a measurable effect on implicit associations among nonsmokers, which may serve to influence their 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—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. This supports 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 attitudes, whereas persuasive attempts built on propositional reasoning may have more effect on explicit attitudes (Gawronski & Strack, 2004; Gawronski & Bodenhausen, 2006; Gibson, 2006).

In this broader context, one can envision a wide variety of behaviors that transportation and identification with a protagonist might influence; for example, the enactment of good-deeds pyramid-schemes in the real world after the release of *Pay it Forward* (Ryan Hyde, 2000; see www.payitforwardmovement.org). 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., identifying with a character) they may be able to change (or at least selectively activate) implicit associations, with potentially insidious consequences.

References

- Aloise-Young, P. A., Hennigan, K. M., & Graham, J. W. (1996). Role of the self-image and smoker stereotype in smoking onset during early adolescence: a longitudinal study. *Health Psychology, 15*, 494-497.
- Blanton, H., Jaccard, J., Gonzales, P. M., & Christie, C. (2006). Decoding the implicit association test: Implications for criterion prediction. *Journal of Experimental Social Psychology, 42*, 192-212.
- Dal Cin, S., Zanna, M. P., & Fong, G. T. (2004). Narrative Persuasion and Overcoming Resistance. In E. S. Knowles & J. A. Linn (Eds.), *Resistance and Persuasion* (pp. 175-191). Mahwah, NJ: Lawrence Erlbaum Associates.
- Dalton, M. A., Sargent, J. D., Beach, M. L., Titus-Ernstoff, L., Gibson, J. J., Ahrens, M. B., et al. (2003). Effect of viewing smoking in movies on adolescent smoking initiation: a cohort study. *Lancet, 362*(9380), 281-285.
- Falomir, J. M., & Invernizzi, F. (1999). The role of social influence and smoker identity in resistance to smoking cessation. *Swiss Journal of Psychology, 58*, 73-84.
- Gawronski, B., & Strack, F. (2004). On the propositional nature of cognitive consistency: Dissonance changes explicit, but not implicit attitudes. *Journal of Experimental Social Psychology, 40*, 535-542.
- Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in evaluation: An integrative review of implicit and explicit attitude change. *Psychological Bulletin, 132*, 692-731.
- Gibson, B. (2006). Classical conditioning of product attitudes: Effects on implicit attitudes and subsequent product choice. Manuscript submitted for publication.

- Gibson, B., & Maurer, J. (2000). Cigarette smoking in the movies: The influence of product placement on attitudes toward smoking and smokers. *Journal of Applied Social Psychology, 30*, 1457-1473.
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*, 701-721.
- Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology, 85*, 197-216.
- Gregory, W. L., Cialdini, R. B., & Carpenter, K. M. (1982). Self-relevant scenarios as mediators of likelihood estimates and compliance: Does imagining make it so? *Journal of Personality and Social Psychology, 43*, 89-99.
- Hines, D., Saris, R. N., & Throckmorton-Belzer, L. (2000). Cigarette smoking in popular films: Does it increase viewers' likelihood to smoke? *Journal of Applied Social Psychology, 30*, 2246-2269.
- Ling, P. M., & Glantz, S. A. (2002). Why and how the tobacco industry sells cigarettes to young adults: evidence from industry documents. *American Journal of Public Health, 92*, 908-916.
- McTiernan, J. (Director). (1988). *Die Hard* [Motion picture]. United States: Twentieth Century Fox.
- Oatley, K. (1996). Inference in narrative and science. In D. R. Olson & N. Torrance (Eds.), *Modes of thought: Explorations in culture and cognition*. New York: Cambridge University Press

- Oatley, K. (2002). Emotions and the story worlds of fiction. In M. C. Green, J. J. Strange & T. C. Brock (Eds.), *Narrative Impact: Social and Cognitive Foundations*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Pechmann, C., & Shih, C. F. (1999). Smoking scenes in movies and antismoking advertisements before movies: Effects on youth. *Journal of Marketing*, 63, 1-13.
- Ryan Hyde, C. (2000). *Pay it Forward*. New York: Pocket Books.
- Sargent, J. D., Beach, M. L., Adachi-Mejia, A. M., Gibson, J. J., Titus-Ernstoff, L. T., Carusi, C. P., et al. (2005). Exposure to movie smoking: its relation to smoking initiation among US adolescents. *Pediatrics*, 116, 1183-1191.
- Slater, M. D., & Rouner, D. (2002). Entertainment-education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory*, 12, 173-191.
- Stacy, A. W. (1997). Memory activation and expectancy as prospective predictors of alcohol and marijuana use. *Journal of Abnormal Psychology*, 106, 61-73.
- Stacy, A. W., Newcomb, M. D., & Ames, S. L. (2000). Implicit cognition and HIV risk behavior. *Journal of Behavioral Medicine*, 23, 475-499.
- Strack, F., & Deutsch, R. (2004). Reflective and Impulsive Determinants of Social Behavior. *Personality and Social Psychology Review*, 8, 220-247.
- Swanson, J. E., Rudman, L. A., & Greenwald, A. G. (2001). Using the Implicit Association Test to investigate attitude-behaviour consistency for stigmatised behaviour. *Cognition & Emotion*, 15, 207-230.

Tickle, J. J., Hull, J. G., Sargent, J. D., Dalton, M. A., & Heatherton, T. F. (2006). A Structural Equation Model of Social Influences and Exposure to Media Smoking on Adolescent Smoking. *Basic and Applied Social Psychology*, 28, 117-129.

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Footnotes

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

² Scores on the smoking-self and smoking-not self blocks of the IAT were correlated, but their unique relations to smoking intention were equal in magnitude, but opposite in sign (cf. Blanton, Jaccard, Gonzales, & Christie, 2006).

Table

Mean (standard deviation) scores on explicit beliefs about smoking as a function of participant smoking status.

	Nonsmokers	Smokers
The image portrayed by people smoking cigarettes is... (very negative to very positive)	1.54 _a (1.07)	2.69 _b (1.67)
I would be less likely to be friends with someone who smokes cigarettes than someone who does not smoke cigarettes (disagree very much to agree very much)	4.00 _a (2.15)	2.04 _b (1.54)
In your estimation what proportion of the overall population smokes cigarettes?	50.00 _a (14.56)	47.69 _a (17.22)

Note. Means in the same row that do not share subscripts differ at $p_{\text{rep}} > .97$.

Figure Caption

Figure. Implicit identification with smoking as a function of smoking status, film clip and identification with John.

