Brief Report

Smoking motives in movies are important for understanding adolescent smoking: A preliminary investigation

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Abstract

Introduction: Exposure to smoking in movies is strongly associated with smoking uptake and maintenance among adolescents. However, little is known about what features of movies (e.g., the context for smoking or motives for a character smoking) moderate the association between exposure to movie smoking and adolescent smoking. This laboratory study examined whether exposure to movie smoking that is portrayed as having a clear motive is associated with the desire to smoke differently than smoking that is portrayed as having no clear motive.

Methods: A sample of 77 middle school students (mean age of 12.8 years, 62% male, 60% Caucasian) viewed movie clips that portrayed smoking as helping to facilitate social interaction, to relax, to appear rebellious, or as having no clear motive. After exposure to each clip, participants rated their desire to smoke.

Results: Exposure to clips where smoking was portrayed as helping characters to relax was associated with a significantly stronger desire to smoke compared with clips where the motive for smoking was unclear. Desire to smoke was similar for clips where no motive was clear, social smoking clips, and rebellious smoking clips.

Discussion: These results suggest that the way that smoking is portrayed in movies is important in determining its effect on adolescent smoking.

Methods

Participants

This study was approved by the Institutional Review Board at RAND. A total of 77 never-smoking adolescents, recruited using media advertising, participated (62% male; 60% Caucasian; 14% Black; and 25% multiethnic). Their mean age was 12.8 years (SD = 1.0). A majority of the sample reported that both parents worked (more than 77%).

Procedures

Smoking and non-smoking clips were selected from 28 wide-release movies (rated PG to R). The smoking scenes were initially...
sorted by study team consensus into four smoking motives categories (see Worth et al., 2007; categorizations used for the final analyses were determined by examining participant data; see Results section below): (a) characters smoking to relax, (b) characters smoking to facilitate social interaction, (c) characters smoking to appear rebellious, or (d) characters smoking where no motive was apparent. A total of 32 smoking scenes (8 per motive category) were selected. Next, non–smoking scenes were selected from the same movies where the same characters that appeared in the smoking scenes were present and where the tone of the scene was similar to that of the identified smoking clip, yielding 32 non–smoking clips. The smoking and non–smoking scenes were trimmed into roughly 2-min segments that provided some context and character development. None of the clips contained sexual, profane, or violent content.

Because of concerns we had with adolescents viewing all the smoking clips at once (i.e., massed exposure to 32 smoking movie clips in a single session), four exposure conditions were created. Each exposure condition contained a unique mix of eight smoking and eight non–smoking clips, and the clips could originate from any of the motive categories. Smoking clips and non–smoking clips were presented in random alternating orders within condition (i.e., smoking clip—non–smoking clip—smoking clip, etc).

Participants completed the study in small groups (informed consent was obtained from participants’ parents), and different groups were randomly assigned to one of the four exposure conditions. Participants first completed baseline measures (e.g., smoking attitudes, perceived smoking risk, self-efficacy, and prior exposure to movie smoking) and then were exposed to their assigned movie clips. After exposure to each clip, participants completed several measures (measures were completed after each clip exposure individually; see below). Finally, participants were debriefed; given a 45-min interactive media literature intervention on cigarette advertising and movie smoking to help them understand, analyze, and criticize those media messages, with the goal of buffering any potentially harmful effects of clip exposure (see Brown, 2006; Primack, Gold, Land, & Fine, 2006); and compensated with $25.

Dependent measure
Postclip exposure desire to smoke was assessed after exposure to each movie clip with the following question, “How much did this clip make you want to smoke?” (1 = not at all and 10 = a lot). This question has been shown to be responsive to adolescents’ responses to cigarette print advertising in other studies (Shadel, Tharp-Taylor, & Fryer, 2008, 2009).

Other postexposure measures
In order to potentially control for variables identified in other research as important to adolescents’ responses to advertising (see Moore & Lutz, 2000), several other measures were given after exposure to each movie clip: (a) “How did this movie clip make you feel?” (1 = very sad to 10 = very happy), (b) “How interesting was this movie clip?” (1 = not at all interesting to 10 = very interesting), (c) “How much did this movie clip make you think?” (1 = not at all to 10 = a lot), (d) “How much did you like this movie clip?” (1 = not at all to 10 = a lot), (e) “How realistic was this movie clip?” (1 = not at all to 10 = a lot), and (f) “How much would you like to see the whole movie that this clip was taken from?” (1 = not at all to 10 = a lot). Participants were also asked whether the clip they just viewed contained smoking (no and yes) and, if yes, whether the actors were smoking to help them: (a) relax, (b) socialize with other people, (c) look like a rebel, or (d) none of the above.

Narrowing the set of movie clips for analysis
First, we eliminated five smoking clips in which too few participants noticed the smoking. Second, we sorted the remaining 27 clips into groups based on whether participants recognized a dominant smoking motive. Relaxation was the dominant smoking motive in six clips, social facilitation was the dominant smoking motive in five clips, and a desire to appear rebellious was the dominant smoking motive in five clips. An average of 63% of participants recognized the dominant motive across categories. Of the remaining 11 clips, we selected 6 to represent the no smoking motive category because they had the highest percentage of participants say that there was no clear motive.

Investigating the distribution of the dependent variable
Participants uniformly reported no desire to smoke after seeing the non–smoking clips, so we restricted our analysis to responses on the smoking clips only. In response to the smoking clips, participants provided a restricted range of responses on the dependent measure (desire to smoke), so we dichotomized responses on it such that a response of 1 on the original 1–10 scale was rescored to 0, representing no desire to smoke postexposure, and responses ≥ 1 on the original scale were rescored to 1, representing any desire to smoke (see Pierce, Choi, Glipin, Farkas, & Merritt, 1996).

Exploring potential confounding variables in the movie clips
We evaluated whether participants’ opinions (see other postexposure measures above) of movie clips varied by motive condition to determine whether we needed to control for these variables in further analysis. Table 1 shows the results of these bivariate analyses. In a logistic regression predicting desire to smoke from each of these potential confounding variables, the only significant predictor of desire to smoke was how much the movie clip made participants think (p = .011). The only other variable that was close to statistical significance in this model was how the clip made participants feel (p = .112). We included these two variables as controls in the analyses that are described next.

Predicting desire to smoke from movie smoking motives
We estimated a logistic regression model that included as predictors of desire to smoke three indicators of motive type, social, relaxation, and rebellious with the no smoking motive type as the comparison category. This model also controlled for participants’ gender, race (non-White vs. White), grades in school (A’s vs. all other grades), and the two potential confounding variables described above. Because each participant watched multiple movie smoking clips, variance parameters for these
Table 1. Mean comparison of participants’ responses to movies with different smoking motive types

<table>
<thead>
<tr>
<th>Variable</th>
<th>Uncertain (n = 122)</th>
<th>Social (n = 71)</th>
<th>Relaxation (n = 112)</th>
<th>Rebellious (n = 92)</th>
<th>F^b</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>How clip made participants feel</td>
<td>5.11, 1.83</td>
<td>5.06, 1.73</td>
<td>4.68, 2.30</td>
<td>5.60, 1.96</td>
<td>3.60</td>
<td>.014</td>
</tr>
<tr>
<td>Interest in the clip</td>
<td>5.67, 2.99</td>
<td>4.09, 2.59</td>
<td>5.57, 2.98</td>
<td>6.44, 2.65</td>
<td>9.14</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Liking for the clip</td>
<td>5.14, 2.93</td>
<td>3.89, 2.59</td>
<td>5.20, 2.88</td>
<td>5.85, 2.81</td>
<td>6.50</td>
<td>.003</td>
</tr>
<tr>
<td>Perceived realism of the clip</td>
<td>5.02, 2.77</td>
<td>5.26, 2.59</td>
<td>4.68, 2.57</td>
<td>5.46, 2.65</td>
<td>1.54</td>
<td>.203</td>
</tr>
<tr>
<td>Desire to see full movie</td>
<td>5.28, 3.27</td>
<td>4.27, 3.03</td>
<td>5.32, 3.21</td>
<td>5.96, 3.35</td>
<td>3.62</td>
<td>.013</td>
</tr>
<tr>
<td>How much clip made participants think</td>
<td>4.65, 2.82</td>
<td>3.93, 2.37</td>
<td>5.12, 2.81</td>
<td>4.99, 2.54</td>
<td>3.18</td>
<td>.024</td>
</tr>
</tbody>
</table>

Note. aThe n’s beneath each motive type refer to the number of clip observations per condition.

bNumerator df for the F test is 2. Denominator df range from 294 to 389.

Table 2. Logistic regression model predicting desire to smoke following exposure to smoking in movie clips

<table>
<thead>
<tr>
<th>Predictor</th>
<th>b</th>
<th>SE</th>
<th>Wald χ^2</th>
<th>p value</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motive type: Social</td>
<td>1.056</td>
<td>0.695</td>
<td>2.310</td>
<td>0.129</td>
<td>2.874</td>
<td>0.737–11.216</td>
</tr>
<tr>
<td>Motive type: Relaxation</td>
<td>0.955</td>
<td>0.479</td>
<td>3.971</td>
<td>0.046</td>
<td>2.597</td>
<td>1.016–6.642</td>
</tr>
<tr>
<td>Motive type: Rebellious</td>
<td>0.834</td>
<td>0.670</td>
<td>1.550</td>
<td>0.213</td>
<td>2.303</td>
<td>0.619–8.560</td>
</tr>
<tr>
<td>Male gender</td>
<td>0.385</td>
<td>0.558</td>
<td>0.477</td>
<td>0.490</td>
<td>1.470</td>
<td>0.492–4.388</td>
</tr>
<tr>
<td>Non-White race</td>
<td>-0.226</td>
<td>0.632</td>
<td>0.128</td>
<td>0.720</td>
<td>.797</td>
<td>0.231–2.751</td>
</tr>
<tr>
<td>Gets mainly A’s in school</td>
<td>0.274</td>
<td>0.749</td>
<td>0.134</td>
<td>0.714</td>
<td>1.316</td>
<td>0.303–5.712</td>
</tr>
<tr>
<td>How the clip made subjects feel</td>
<td>0.126</td>
<td>0.083</td>
<td>2.304</td>
<td>0.129</td>
<td>1.134</td>
<td>0.946–1.334</td>
</tr>
<tr>
<td>How much the clip made subjects think</td>
<td>0.205</td>
<td>0.086</td>
<td>5.703</td>
<td>0.017</td>
<td>1.227</td>
<td>1.037–1.452</td>
</tr>
</tbody>
</table>

Note. OR = odds ratio.

aThe comparison (holdout) category was the “unclear motive type.”

Discussion

Increasing exposure to smoking in movies contributes to increases in adolescent smoking (Dalton et al., 2009; DiFranza et al., 2006; NCI, 2008; Wellman et al., 2006). Although psychosocial mechanisms that mediate this association have been explored (Sargent et al., 2002; Wills et al., 2007, 2008), research has not yet examined whether the way that smoking is portrayed in movies affects its influence on adolescent smoking. Portrayals of smoking to relax, appear rebellious, and facilitate social interactions are common in movies (Worth et al., 2007), and adolescents who believe that smoking will help serve such motives are more generally at greater risk of smoking (Johnson et al., 2003; Wills et al., 1999, 2007).

This study provides initial evidence that the way in which smoking is portrayed in movies matters in determining its influence on adolescents’ orientation toward smoking. In particular, we found that smoking that is portrayed as facilitating relaxation—but not smoking that is portrayed as facilitating social interaction or a desire to appear rebellious—more strongly relates to adolescents’ desire to smoke than smoking that is portrayed as serving no clear motive. Smoking to ameliorate negative affect is a potent reason for smoking among adolescents (Johnson et al., 2003). Our findings suggest that adolescents learn about this smoking motive (and possibly others) from exposure to movies that clearly portray smoking as having
such a function. In theory (Bandura, 2006), such learned motives then come to regulate smoking behavior. Although not all smoking in movies is shown with reference to a specific motive, between 35% and 46% of portrayals do incorporate motives (Worth et al., 2007). From a policy or intervention standpoint, it may be prudent to focus on these types of portrayals as they may be most likely to have an impact on adolescents’ desire to smoke.

Our study also makes a methodological contribution. Studies of smoking in adolescents face ethical and methodological challenges (Moolchan & Mermelstein, 2002). Research on adolescent exposure to smoking media may be particularly challenging in that researchers are rightly wary of exposing adolescents to cigarette advertisements or movie clips on the assumption that doing so could increase their chances of smoking in the future. The methods of this study were designed to minimize this risk (e.g., alternating smoking and non-smoking clips; presenting a media literacy intervention) and in doing so provided new methodological information for the field.

There are limitations to this study. First, desire to smoke was the main dependent variable, not actual smoking behavior. Second, the sample of movie clips was selective. Therefore, these results may not generalize to other instances of movie smoking. Third, the study employed a reactively recruited sample of early adolescent never-smokers; our findings may not generalize to other populations of adolescents. Despite these limitations, the results of this study suggest that how smoking is portrayed in movies is important for understanding the influence of such portrayals on adolescent smoking. Future research using randomized experimental designs and prospective designs would further advance knowledge in this domain of inquiry.

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**Declaration of Interests**

None declared.

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**References**


Motives for movie smoking


