Integrating Negative Social Cues in Tobacco Packaging: A Novel Approach to Discouraging Smokers

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Smoking is a major public health concern warrants a multipronged strategy incorporating a range of tools and approaches. One such tool is tobacco packaging itself, given its ability to prominently and repeatedly warn smokers of tobacco's dangers via text and images. This research explores a novel approach to tobacco packaging, using negative social cues as opposed to the traditional fear-based appeals as a means of discouraging smoking.

Background and Hypotheses

Smoking, Social Norms, and Cues

All societies possess social norms dictating what behaviours and activities are deemed acceptable (Schultz et al. 2007). Social cues are one means by which to signal a norms violation, as facial expressions and other non-verbal communications can help the receiver decode a situation and guide a response (LaPlante and Ambady 2002); for example, adding a frowning face emoticon to feedback motivates compliance with a desired behaviour (Schultz et al. 2007). We posit these negative cues are effective because they cause the target of this cue to feel negative self-conscious emotions (e.g. guilt, shame, embarrassment; Lewis 2008), as people report feeling guilty when they have violated societal norms and standards (Dahl, Honea, and Manchanda 2003). Experiencing negative self-conscious emotions in turn drive an individual to engage in reparative behaviours (Brennan and Binney 2010; Passyn and Sujan 2006). When people feel that they have done something wrong, most are motivated to make amends, often by ceasing to engage in the offending behaviour, apologize for the wrongdoing, or avoid the situation entirely (Lewis 2008).

Given the current 'anti-smoking' climate that exists in many countries (e.g. United States), smokers are aware that their habit is stigmatized and considered a norms violation (Graham 2012; Bell et al. 2010). Communities where smoking is socially unacceptable report lower smoking rates, with resident smokers reporting higher motivation to quit (Alamar and Glantz 2006; Kim and Shanahan 2003). Smokers may go as far as to hide ashtrays in their homes when non-smoking friends are invited over (Burton et al. 2015). It appears then that smoking can generate a degree of self-consciousness, especially when in the presence of non-smokers. Incorporating pictures of disapproving 'others' onto tobacco packaging intended to remind smokers that they are violating a social norm should likewise generate self-conscious emotions in smokers. Since individuals dislike experiencing negative self-conscious emotions such as shame, guilt, and embarrassment, smokers exposed to this packaging should thus actively work to avoid or undo this feeling, by abstaining from or reducing consumption:

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H1:   Negative social cues on tobacco packaging will increase smoking cessation intentions in smokers, mediated by an increase in negative self-conscious emotions.
While social cues should affect smoking intentions, they are unlikely to work equally across all segments. For example, some smokers view their habit as socially acceptable because many in their peer group are smokers too (Bell et al. 2010), creating a type of insulated bubble against a broad societal anti-smoking backlash. In this group, which we refer to as 'immersive smokers,' tobacco use is an acceptable part of their social identity and social cues on packaging should do little to discourage smoking. Conversely, negative social cues on tobacco packaging should be particularly effective in 'isolated smokers' for whom smoking may represent merely a guilty pleasure or tobacco addiction, something to be done privately away from their non-smoking friends. These smokers are acutely aware of the stigma associated with the behaviour and are likely to dissociate their smoking behaviours with their overall social self-identity. Tobacco packaging reinforcing the smoking stigma they actively avoid should help encourage quitting:

H2:   The effectiveness of negative social cues on self-conscious emotions will be moderated by the degree to which individuals associate smoking with their social self-identity; for individuals with a low (high) social self-identity tied to smoking, social cues will be relatively more (less) effective at encouraging smoking cessation.

Study Design and Methodology

Design
We conducted an online experiment with a paid Qualtrics panel of American adult smokers (n = 156; 53% male; M_{age} = 49 years, SD = 11.39). Participants were randomized to view one of two tobacco packages with the same tagline ("this is how people look at smokers") but different images featuring the same three individuals either displaying neutral or disgusted expressions. These pretested images served as our social cue manipulation (see appendix A for stimuli). Prior to viewing the package, participants were told that they would be shown an image of a potential new tobacco package currently in development and encouraged to examine it carefully. Next, participant responses were collected for study variables in the following order: dependent variable, mediator variable, moderator variable, demographics, and manipulation check. To begin, participants were asked to indicate the extent that the package (1) made them want to quit and (2) cut down on smoking (1 = "not at all" and 7 = "extremely"), which we averaged to form one composite dependent variable (α=.95). Then we asked six questions assessing how guilty, ashamed, embarrassed, culpable, remorseful, and humiliated the packaging made them feel (1 = "not at all" and 7 = "extremely"), which we averaged into a composite of self-conscious emotions (α=.96). Next, participants were asked nine questions assessing the degree to which they used smoking for impression management, again with a seven-point Likert scale (e.g., 1 = 'smoking is not part of my style' vs. 7 = 'smoking is part of my style' [α=.75], see appendix B). We assessed age, gender, average number of cigarettes smoked per day and a single-item measure asking participants to indicate their current smoking cessation status (Owen et al. 1992). All four variables are included as covariates in the analyses. Finally, participants rated how disgusted, repulsed and sickened the individuals on the packaging looked as a manipulation check (0 = not at all, 10 =

completely; α=.89). All participants were debriefed and provided a list of smoking-cessation resources upon study completion.

Results

The manipulation was successful. Participants shown the negative social cue package rated the faces as more disgusted (M =7.45) than participants shown the neutral social cue package (M =4.92; $F(1,153)$ =36.6, p<.001). Further, compared to participants shown the neutral social cue packaging, those shown the negative social cue packaging reported higher levels of felt self-consciousness ($M_{neutral}$ =1.92 versus $M_{negative}$ =2.54, $F(1,153)$, p =.01). There was no difference between the two groups on overall quit intentions ($M_{neutral}$ =2.32 versus $M_{negative}$ =2.66, F(1, 153), p =.19.) suggesting the potential for an indirect effect (Zhao, Lynch and Chen 2010). To test the hypotheses, we used the PROCESS macro for SPSS (5,000 bootstrapped samples; Hayes 2013). Our first hypothesis predicted feelings of self-consciousness mediate the effects of social cues (IV) on smoking cessation intentions (DV), which we tested using PROCESS model 4 (i.e. a mediation model; table 1). The results supported our first hypothesis, demonstrating an indirect effect of social cue on quit intentions mediated by feelings of self-consciousness (β = .24, 95% CI = .07, .42), but no direct effect of social cue on intentions (β = -.07, 95% CI = -.26, .12). As predicted, negative social cues on tobacco packaging increases feelings of self-consciousness in smokers, leading to higher intentions to quit.

We also predicted that certain smokers would be especially sensitive to social cues, namely those isolated smokers who do not use smoking as part of their social identity construction. This hypothesis reflects moderated-mediation, which we tested using PROCESS model 7 (Hayes 2013). The indirect effect of the highest-order interaction through self-conscious emotions was significant (i.e. index of moderated-mediation β = -.27, 95% CI = -.47, -.07; table 2), which indicates significant moderation of the mediated path. When a person's social identity is strongly tied to smoking (+1 SD), there is no indirect effect of using negative social cues (β = -.01, 95% CI = -.25, .22). However, when social identity is weakly tied to smoking (-1 SD), the indirect effect of using negative social cues is positive and significant (β = .49, 95% CI = .23, .77). These results provide support for H_2, demonstrating that whereas immersive smokers are relatively impervious to negative social cues on packaging, isolated smokers are apt to feel self-conscious and adjust smoking intentions accordingly. For this particular smoking segment, negative social cues appear effective at deterring smoking. This analysis also found a non-significant direct effect (β = -.07, 95% CI = -.26, .12) and that women were less likely than men to want to quit/cut down (β = -.58, 95% CI = -.95, -.21).

Discussion

Our findings contribute in two meaningful ways. To begin, we extend the existing research on social cueing, demonstrating that its effectiveness is mediated by the generation of self-conscious emotions. In addition, our research suggests that alternatives to the traditional fear-based packaging techniques are worth considering in the fight against tobacco, and in particular that social cues may be effective in the isolated smoker segment. Prior to implementing this technique in practice, follow-up research should contrast its effectiveness with that of current fear-based packaging, to

determine if and in what segments this approach offers incremental benefit. Given the devastating effects of smoking, it is important to identify a variety of approaches to discouraging smoking. Incorporating negative social cues on tobacco packaging may just be one such tool.

Tables

TABLE 1. Mediation Analysis Results

	Indirect Effect (CI)	Direct Effect (CI)
DV: Desire to Quit	**.23 (.06, .41)**	-.04 (-.23, .15)
DV: Desire to Cut Down	**.26 (.07, .44)**	-.10 (-.32, .11)
DV: Composite*	**.24 (.07, .42)**	-.07 (-.26, .12)

Note: Process Model 4 with 5,000 draws (mediator = self-conscious emotions); *mean of Quit, Cut Down (α = .95); covariates include age, gender, smoking cessation readiness and number of cigarettes smoked per day; a path **(bold)** is significant if CI does not straddle zero.

TABLE 2. Moderated-Mediation Analysis Results

Moderator	Est. at:	DV: Desire to Quit			DV: Desire to Cut Down			DV: Composite		
		IMM (CI)	Indirect Effect Through Mediator (CI)	Direct Effect (CI)	IMM (CI)	Indirect Effect Through Mediator (CI)	Direct Effect (CI)	IMM (CI)	Indirect Effect Through Mediator (CI)	Direct Effect (CI)
Smoking as Social Identity	-1SD	**-.25 (-.44, -.07)**	**.47 (.21, .72)**	-.04 (-.23, .15)	**-.28 (-.49, -.07)**	**.51 (.23, .80)**	-.10 (-.32, .11)	**-.27 (-.47, -.07)**	**.49 (.23, .77)**	-.07 (-.26, .12)
	+1SD		-.01 (-.24, .21)			-.01 (-.26, .41)			-.01 (-.25, .22)	

Note: Process Model 7 with 5,000 draws (mediator = self-conscious emotions); covariates include age, gender smoking cessation readiness and number of cigarettes smoked per day; a path **(bold)** is significant if CI does not straddle zero; IMM = Index of Moderated Mediation (must not straddle 0 for an interpretation of moderation to be supported). At the request of a reviewer, we also ran three amended moderated-mediation analyses. In two, one item was removed from the moderator. With the item "smoking makes me feel younger" removed, the results were substantively the same: [DV: Composite] IMM = -.27 (CI = -.46, -.08) (-1SD = .50, CI = .23, .77; +1SD = -.02, CI = -.26, .20). Similarly, with the item "I smoke publicly" removed, the results were substantively the same: [DV: Composite] IMM = -.22 (-.42, -.03) (-1SD = .49, CI = .21, .78; +1SD = .05, CI = -.18, .27). Finally, we ran a model where both items were removed from the moderator jointly and the results were similar: [DV: Composite] IMM = -.22 (-.42, -.03) (-1SD = .48, CI = .19, .77; +1SD = .04, CI = -.21, .26).
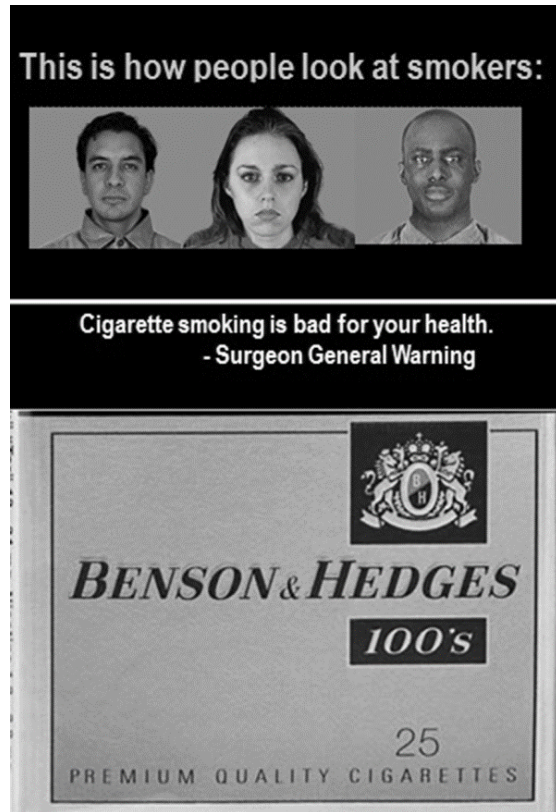
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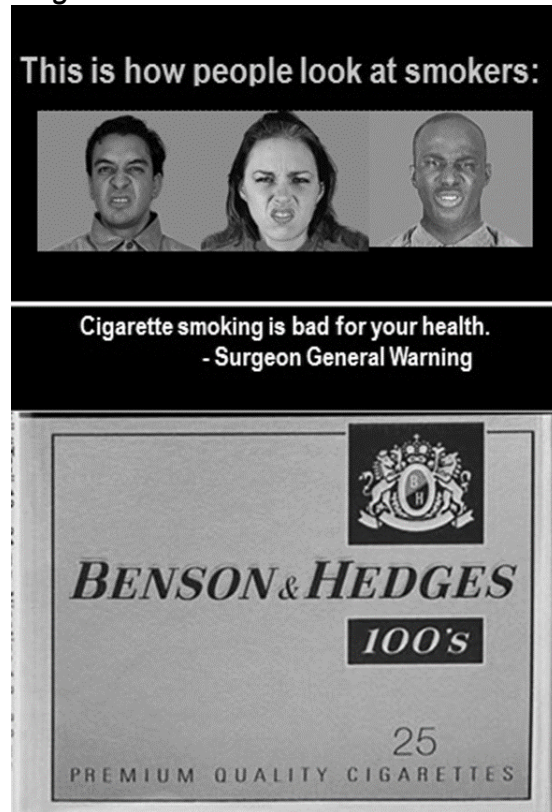
Appendices

Appendix A. Tobacco package stimuli

Neutral Social Cue

Negative Social Cue

Appendix B. Smoking Identity Measures

• I smoke publicly	• Most of my friends are smokers
• Smoking is part of my style	• Smoking makes me feel good about myself
• Smoking reflects who I am	
• Smoking is an important part of my social life	• Smoking makes me look good in front of others
• Smoking makes me feel younger	• Smoking makes me popular

(adapted from van den Putte et al. 2009)