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# Youth Receptivity to FDA's *The Real Cost* Tobacco Prevention Campaign: Evidence From Message Pretesting

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## Abstract

In February 2014, the Food and Drug Administration launched *The Real Cost*, a national youth tobacco prevention campaign. This article examines youth receptivity to potential campaign ads using data from 3 message pretesting studies featuring the same design and consistent instrumentation. A total of 3,258 adolescents ages 13–17 were randomized to either an ad-viewing condition or a no-exposure control condition. Perceived ad effectiveness, smoking-related beliefs, and attitudes were measured as outcome variables. The sample consisted of both experimental smokers (58%) and current nonsmokers at risk for cigarette initiation (42%). A total of 14 ads were tested across the three studies. Participants who viewed the ads generally considered them to be effective (with a mean perceived ad effectiveness score of 3.66 on a scale from 1 to 5). Compared to those in the control condition, participants in the ad-viewing condition reported stronger beliefs about the health risks of smoking ($p < .001$), a greater likelihood that smoking would lead to loss of control in life ($p < .001$), and more negative attitudes toward smoking ($p < .001$). Responses to campaign ads were largely consistent between experimenters and at-risk nonsmokers. Implications of the findings for the campaign are discussed.

There is unequivocal evidence of the extensive harm tobacco inflicts on individual and public health in the United States (U.S. Department of Health and Human Services [DHHS], 2014). To reduce this enormous public health burden, the Family Smoking Prevention and Tobacco Control Act, signed into law in 2009, gave the Food and Drug Administration (FDA) the authority to regulate tobacco products and to educate the public—especially young people—about the dangers of tobacco use. Evidence from controlled field experiments and population studies shows that mass media campaigns designed to discourage tobacco use can change attitudes about tobacco use and reduce smoking prevalence (Brinn, Carson, Esterman, Chang, & Smith, 2010; Davis, Farrelly, Messeri, &

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Duke, 2009; National Cancer Institute, 2008). As part of its comprehensive tobacco control strategy, FDA is investing in a series of media campaigns to educate the public about the harms and risks associated with tobacco use. FDA's first nationwide public education campaign, branded *The Real Cost*, was launched in February 2014 and specifically targets youth ages 12–17 who are either experimenting with cigarette smoking or at risk for initiating use. Extensive formative research was carried out to inform campaign strategy and the development of specific messages. After rough-cut advertisements were produced, a series of controlled experiments were then conducted to assess the potential efficacy of these advertisements. This article reports evidence from these experimental studies. The primary questions the studies sought to answer were whether the campaign messages were well received by the target audience and whether they had the potential to move youth attitudes and beliefs in a direction that would protect youth from future tobacco use. These studies also served as a check to make sure that exposure to campaign advertisements would not lead to any adverse, unintended consequences among the targeted youth population.

## Background

### Focus on Youth Prevention

*The Real Cost* campaign targets youth because cigarette use is almost always initiated and established during adolescence. The vast majority of adult daily smokers report onset of smoking by the age of 18 (U.S. DHHS, 2014). Teens are sensitive to the reinforcing effects of nicotine in combination with other chemicals found in tobacco products, which makes them particularly susceptible to nicotine addiction (U.S. DHHS, 2012). Indeed, the first symptoms of nicotine dependence in adolescents can appear within a matter of days or weeks of the onset of intermittent tobacco use (DiFranza et al., 2000). For these reasons, *The Real Cost* is designed to target two groups of at-risk youth ages 12–17: those who have already experimented with smoking but have not smoked 100 or more cigarettes in their lifetime and those who have not yet initiated smoking but are at increased risk for doing so based on an established smoking susceptibility measure (Pierce, Farkas, Evans, & Gilpin, 1995). These two groups represent two adjacent phases in youth smoking progression, with a fair amount of similarity in their risk profiles (Mowery, Farrelly, Haviland, Gable, & Wells, 2004).

With more than a decade of decline in smoking rates among youth, the size of the target audience has decreased, making the task of further reducing youth tobacco use difficult. In 2014, only 9.2% of high school students reported current cigarette smoking compared to 15.8% in 2011 (Centers for Disease Control and Prevention, 2015). Today's youth who smoke, experiment with smoking, or contemplate initiating smoking do so in spite of the efforts that have led many of their peers to become committed nonsmokers. They are a tougher audience to influence and require fresh tactics to reach and engage them.

### Campaign Rationale

*The Real Cost* draws insights from a broad range of behavioral, psychological, and communication theories as well as previous empirical research on youth smoking. The basic structure of its logical model is provided by the theory of planned behavior (TPB; Ajzen,

1991) or, more broadly, the reasoned action approach to behavioral prediction (Fishbein & Ajzen, 2010). According to the TPB, the best and most proximal predictor of any given behavior is behavioral intention (i.e., an individual's readiness to perform the behavior). Intention in turn is determined by behavioral attitude, subjective norm, and perceived behavioral control. An important proposition of the TPB—a view shared by many other behavioral theories—is that attitude, subjective norm, and perceived behavioral control are each influenced by a set of underlying beliefs. For attitude, the beliefs are typically about the likelihood that performing the behavior will bring about favorable or unfavorable outcomes. For subjective norm, the beliefs are about specific social referents' opinions of one's behavioral performance. For perceived behavioral control, the beliefs are about the extent to which individuals can successfully engage in the target behavior under different, and even difficult, situations. From the perspective of communication campaigns, it is important to understand what specific beliefs underlie attitude, norm, and perceived control, thus eventually driving behavioral intention for the target population. In general, campaign messages that address salient and influential beliefs will be more likely to succeed at motivating positive behavior change among the target audience (Farrelly, Niederdeppe, & Yarsevich, 2003; Fishbein & Yzer, 2003; Hornik & Woolf, 1999).

Empirical research on smoking has supported the utility of the TPB as an explanatory and predictive framework for youth smoking, with outcomes ranging from initiation (e.g., Higgins & Conner, 2003), progression (e.g., Hill, Boudreau, Amyot, Déry, & Godin, 1997), and reduction (e.g., Moan & Rise, 2006), to cessation (e.g., Høie, Moan, Rise, & Larsen, 2012) . Of particular relevance to the current research is that a recent meta-analysis found that the TPB variables are also predictive of youth abstinence from smoking (McEachan, Conner, Taylor, & Lawton, 2011). Findings such as these have led to wide adoption of the TPB as a foundational theory in both youth smoking prevention programs and broader tobacco control efforts (Babrow, Black, & Tiffany, 1990; Cohen, Shumate, & Gold, 2007; National Cancer Institute, 2008). Indeed, a content analysis of both youth and adult tobacco media campaign messages in the United States showed that consequential beliefs focusing on the harms of smoking are the most often targeted beliefs in televised antismoking advertisements (Cohen et al., 2007). To the extent that such beliefs are often the basis of smoking attitudes, this finding can be considered as providing general testimony to the relevance and importance of the TPB in the tobacco context. Similar findings have also been reported in other reviews of message strategies in tobacco education mass media campaigns (Durkin, Brennan, & Wakefield, 2012; Farrelly et al., 2003).

## Campaign Message Strategies

In addition to theory and previous evidence on youth smoking, the general message strategies for *The Real Cost* were informed by new research that expressly evaluated the potential of various target beliefs for the campaign (Brennan, Gibson, Momjian, & Hornik, 2013). The selection of these target beliefs was guided by an approach proposed by Hornik and Woolf (1999). According to this approach, promising target beliefs for communication campaigns should satisfy three criteria. First, they have to show a strong relationship with behavioral intention. Beliefs that are weakly associated with intention are unlikely to bring about behavior change even if they show substantial movement as a result of campaign

exposure. Second, promising target beliefs should have room for favorable change. That is, they cannot be beliefs that everybody in the target audience already strongly agrees with. There has to be a sizable portion of the population that does not yet hold a desirable position on the belief and thus can be positively influenced by campaign messaging. Third, campaign target beliefs have to lend themselves to the construction of strong, persuasive messages. Weak messages—even if they address important beliefs—are unlikely to lead to behavior change.

Although this third criterion is largely a judgment call on the part of campaign planners, the first two can be empirically ascertained through survey-based audience analysis. To inform *The Real Cost*, a cross-sectional survey was conducted with a nationally representative sample of nonsmoking youth ages 13–17 ($N$ = 1,142; Brennan et al., 2013). A large number of smoking-related beliefs—attitudinal, normative, and efficacy related—were measured, as was youth intention to initiate smoking. The association of various belief clusters with smoking intention was examined and the potential impact of belief change on intention was calculated. Based on these analyses, also considering the scope of FDA's regulatory authority, three primary message themes were identified for the campaign, each comprising a cluster of related beliefs: health consequences of smoking, loss of control and independence because of addiction to smoking, and dangerous chemicals in each cigarette.

These general message themes have remained the focus of the campaign, which has been running continuously since 2014 and has gone through multiple waves of message production and dissemination. Each wave of the campaign has followed the same process of message construction and testing. First the message themes are developed into creative concepts. Then animatic executions of the creative concepts are pilot-tested using focus groups recruited from the target youth population from geographically diverse locations across the country. Participants are typically shown five or six different creative executions and asked to discuss each concept's clarity, relevance, and potential impact. Findings from the focus groups are then used to refine the creative concepts and inform the selection of a final set to go into production. Finally, after rough cuts of the advertisements are produced, a controlled experimental study is conducted to examine the potential effectiveness of each advertisement as well as the possibility of unintended consequences. In this article, we present findings from the experimental message pretesting studies for the first three advertising waves of *The Real Cost.*

## Research Questions

The message pretesting studies for *The Real Cost* inform not only decisions regarding the use of specific messages but also confidence in the campaign's overall message strategies. Although not primarily aimed at theory testing, the research questions for *The Real Cost* message experiments reflect important insights from relevant behavioral, psychological, and communication research. The cognitive response tradition in social psychology suggests that the eventual outcomes of persuasion are fundamentally determined by the kind of thoughts and feelings generated by message exposure (Cacioppo & Petty, 1981; Greenwald, 1968). In the same vein, health communication research has focused on message evaluations, particularly perceived message effectiveness, as important outcomes in their own right

(Dillard, Weber, & Vail, 2007; Yzer, LoRusso, & Nagler, 2015; Zhao, Strasser, Cappella, Lerman, & Fishbein, 2011). There is growing evidence that perceived message effectiveness is predictive of smoking-related beliefs, attitudes, intentions, and behavior (Bigsby, Cappella, & Seitz, 2013; Davis, Nonnemaker, Duke, & Farrelly, 2013; Davis, Nonnemaker, Farrelly, & Niederdeppe, 2011; Duke, Nonnemaker, Davis, Watson, & Farrelly, 2014), although this evidence is mostly limited to the adult population. *The Real Cost* message pretesting studies use an established measure of perceived ad effectiveness (Davis et al., 2013) and extend its use to the youth population. The first research question for these studies is as follows:

> Research Question 1: Are *The Real Cost* messages perceived as effective by the target audience?

It is generally implausible to examine behavior as an outcome in campaign message pretesting, even though behavior change is often the ultimate goal for public health communication campaigns. *The Real Cost* message pretesting studies focus on risk beliefs and smoking attitudes as two key outcomes. According to the TPB (Ajzen, 1991), attitude predicts behavioral intention, which in turn predicts behavior. Beliefs about the potential consequences of behavioral performance are in themselves predictive of behavioral attitudes. Thus, both the attitude and belief measures can be useful in assessing the campaign messages' potential to eventually influence smoking behavior. Moreover, the belief measures used in *The Real Cost* studies are generally reflective of the campaign's thematic focus on health consequences, loss of control, and dangerous chemicals in cigarettes. An added advantage of the belief measures, therefore, is to see whether message exposure can effect changes—whether favorable or unfavorable—in the campaign-targeted beliefs. Hence the second research question:

> Research Question 2: Does exposure to *The Real Cost* messages lead to favorable (or unfavorable) changes in smoking-related beliefs and attitudes?

The target population for *The Real Cost* includes two subgroups: experimenters and at-risk nonsmokers. These two groups represent sequential stages in youth smoking progression (Mowery et al., 2004) and share important similarities. For this reason, *The Real Cost* has decided to target both groups simultaneously in one comprehensive campaign. It would be important to understand, however, whether these two groups react to the campaign messages differently. Findings in this area can bring important insights to inform future audience segmentation and messaging strategies. This constitutes the third research question for this research:

> Research Question 3: Do perceived effectiveness and the effect of message exposure on smoking beliefs and attitudes vary between experimenters and at-risk nonsmokers?

## Method

### Overview and Procedure

The three message pretesting studies reported here all featured the same design, followed the same experimental procedures, and sought to answer the same research questions. In a way,

they can be considered replications of the same study testing different sets of newly produced campaign advertisements.

All studies took the form of an online self-administered survey with a built-in experimental component manipulating ad exposure. The studies were programmed using Confirmit, a multichannel survey software platform. Participants completed the studies on their own computers, tablets, or smartphones. In each study, participants first answered background questions about themselves and their smoking experience. They were then randomly assigned to either an exposure or control condition. Those in the exposure condition were presented with one or more randomly selected campaign ads and asked to evaluate the ads on a number of different dimensions, including perceived effectiveness. They then filled out an outcome questionnaire assessing smoking-related beliefs and attitudes. Those in the control condition did not view any ads and only completed the outcome questionnaire. Although the experimental procedure and instrumentation were largely the same for all three studies, the number of ads shown was different between Study 1 and Studies 2 and 3. In Study 1 each participant in the exposure condition viewed two ads, whereas in Studies 2 and 3 each participant in the exposure condition viewed only one ad. Participants received $20 as compensation for their time on completion of the studies.

## Recruitment and Sample

In all three studies, participants were recruited through mall intercept in diverse locations across the United States. Both parental consent and youth assent were obtained prior to participation. Because *The Real Cost* targets experimenters and at-risk nonsmokers, only adolescents in these two groups were included in the study. Using classification schemes suggested by past research (Mowery et al., 2004; Pierce et al., 1995), we defined experimenters as those who had smoked fewer than 100 cigarettes in their lifetime and at-risk non-smokers as those who had not smoked but were susceptible to initiating smoking. The questions used for screening are presented in the “Measures” section (see below). A recruitment ratio was set in each study for experimenters and at-risk nonsmokers. In Study 1, the ratio was two experimenters to one at-risk nonsmoker. In Studies 2 and 3, the samples were evenly split between the two groups.

Sample characteristics for the three studies are summarized in Table 1.

## Campaign Advertisements

Altogether 14 advertisements were tested in three studies: six in Study 1, two in Study 2, and six in Study 3. Each ad was about 30 seconds long and featured one or more of the three predetermined campaign themes. In Study 1, each participant was shown two randomly selected ads from the set of six. In Studies 2 and 3, each participant was exposed to only one randomly selected ad. Brief descriptions of the ads are provided in Table 2.

## Measures

**Smoking Status—**Smoking behavior was screened using questions adopted from the National Youth Tobacco Survey. Potential participants were asked whether they had ever tried cigarette smoking, even one or two puffs. Those answering no were considered

nonsmokers. Those answering yes were then asked how many cigarettes they had smoked in their entire lives. Those who had smoked 100 or more cigarettes were considered established smokers and excluded from the studies. Those who had smoked anywhere between 1 puff and 99 cigarettes were considered experimenters.

**Smoking Susceptibility—**Susceptibility among nonsmokers was assessed using a previously validated measure focusing on youth smoking intentions under various circumstances (Pierce et al., 1995). Participants were asked whether they would smoke a cigarette (a) soon, (b) in the next year, (c) if one of their best friends offered them a cigarette. The answering options included "definitely yes," "probably yes," "probably not," and "definitely not." Following established practice in the literature, participants answering "definitely not" to all three questions were considered committed nonsmokers (and excluded from the studies); participants reporting any other pattern were considered at-risk non-smokers susceptible to initiation.

**Perceived Effectiveness—**A 6-item scale was used to measure perceived ad effectiveness (Davis et al., 2013): "This ad (a) is powerful, (b) is informative, (c) is meaningful, (d) is convincing, (e) is worth remembering, and (f) grabbed my attention." Responses were given on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. An overall index for each ad was created by averaging the scores from the six items. Mean perceived effectiveness scores for the ads are presented in Table 3.

**Beliefs—**Perceived consequences of smoking were assessed using a battery of belief items. In Study 1, five beliefs were included: "If I smoke cigarettes, I will (a) damage my body, (b) inhale poisons, (c) develop cancer, (b) be controlled by smoking, and (e) be unable to stop when I want." In Studies 2 and 3, two additional items were included: "(f) damage my lungs, and (g) shorten my life." Responses again ranged from 1 = *strongly disagree* to 5 = *strongly agree*. These beliefs were designed to reflect the general campaign themes for *The Real Cost* and were grouped into two subscales: health risks/chemicals (a, b, c, f, g) and loss of control (d and e). The items addressing health risks and dangerous chemicals were combined because the two themes were closely related (and often featured concurrently in the ads; see Table 2). A summary score for each subscale was obtained by averaging across the component items (see Table 4).

**Smoking Attitude—**Following norms in attitude and behavioral research (Ajzen, 1991; Fishbein & Ajzen, 2010), participants indicated the extent to which they thought that smoking cigarettes was bad/unenjoyable or good/enjoyable. In Study 1, the questions were asked in a dichotomous format, where 1 was bad/unenjoyable and 2 was good/enjoyable. In Studies 2 and 3, responses were given on a 5-point scale from 1 = *very bad/very unenjoyable* to 5 = *very good/very enjoyable*. The two items were averaged to create the overall attitude score in each study (see Table 4).

**Background Variables—**Participants reported their gender, age, and race/ethnicity. They also reported whether they were currently living with a cigarette smoker (coded 1 = yes vs. 0 = no) and the number of their closest four friends who smoked cigarettes (0–4; see Table 1).

### Data Combination

Preliminary analyses of data from each study showed consistent results with respect to Research Questions 2 and 3. To simplify presentation, data from the three studies were combined for these analyses. As described previously, there were two minor differences between the instrumentation for Study 1 and Studies 2 and 3. First, there were two additional health risk beliefs in Studies 2 and 3. However, because all of the belief items used the same metric (a 5-point Likert scale), the average of the items was directly comparable across studies. Thus, no adjustment was made in the process of data combination. Second, the smoking attitude questions were dichotomous in Study 1 but used a 5-point response format in Studies 2 and 3. To make the metric comparable, we recoded the responses in Study 1 into 1 and 5 (instead of 1 and 2). We then combined the data while acknowledging that the attitude questions from Study 1 had more limited variation than those in Studies 2 and 3.

### Analysis Strategy

To answer Research Question 1, we performed descriptive analysis on the perceived effectiveness scale for all ads. To answer Research Question 2 and Research Question 3, we conducted a series of analyses of covariance. Analyses involving the two belief scales and smoking attitude were based on the full sample. The analysis involving perceived effectiveness used only those in the ad exposure condition. In the former analysis, experimental condition (exposure vs. control) and risk status (experimenter vs. at-risk nonsmoker) entered the analyses of covariance as fixed factors. In the latter analysis, only risk status was included as a fixed factor. Both analyses controlled for the background variables listed in Table 1 as covariates. The statistical package used for data analysis was SPSS Version 23.

## Results

Results pertaining to Research Question 1 are summarized in Table 3. As shown, mean ratings for the ads ranged from 3.40 to 3.87, with an average of 3.66. Out of 14 tested ads, only one scored below 3.5 (Alison 2). All of the mean ratings differed significantly from the scale midpoint (3) based on one-sample $t$ tests (all $p$s < .001). Overall, these scores indicated that the ads were well received by study participants.

Descriptive statistics for risk beliefs and smoking attitude are presented in Table 4, and results related to Research Questions 2 and 3 are summarized in Table 5. Across the three smoking-related outcomes, a significant main effect of experimental condition was observed: health risks/chemicals, $F(1, 3160) = 17.84$, $p < .001$; loss of control, $F(1, 3154) = 47.36$, $p < .001$; attitude, $F(1, 3163) = 48.07$, $p < .001$. As shown in Table 5, compared to participants in the control condition, those exposed to campaign ads perceived greater health risks of and chemical intake from smoking ($M = 4.04$ vs. 3.87) and were more likely to believe that smoking could lead to loss of control in life ($M = 3.62$ vs. 3.29). They also expressed more negative attitudes toward smoking ($M = 1.80$ vs. 2.11) than those in the control condition.

Risk status also had a significant main effect on all three smoking outcomes: health risks/chemicals, $F(1, 3160) = 7.73$, $p = .005$; loss of control, $F(1, 3154) = 24.30$, $p < .001$; attitude, $F(1, 3163) = 9.58$, $p = .002$. Experimenters perceived lower risk of health impact and chemical intake ($M = 3.90$ vs. 4.01), reported a lower likelihood of loss of control ($M = 3.33$ vs. 3.58), and held a more positive attitude toward smoking than at-risk nonsmokers ($M = 2.03$ vs. 1.88; see Table 5). The interaction between exposure and risk status was not significant for health/chemicals, $F(1, 3160) = .06$, $p = .805$, or attitude, $F(1, 3163) = 3.09$, $p = .079$. It barely reached significance in the case of loss of control, $F(1, 3154) = 4.64$, $p = .031$. The effect of exposure on beliefs about loss of control was more pronounced among experimenters ($M_{control} = 3.11$ vs. $M_{exposure} = 3.55$) than among at-risk nonsmokers ($M_{control} = 3.46$ vs. $M_{exposure} = 3.69$).

The analysis of perceived effectiveness revealed no main effect of risk status, $F(1, 2585) = 1.04$, $p = .308$. Experimenters and at-risk nonsmokers did not differ in their ratings of perceived ad effectiveness (see Table 5).

## Discussion

An important purpose of the experimental message testing for *The Real Cost* was to see whether the campaign ads were well received by the target audience before their launch into the marketplace. The key barometer used for this assessment was perceived ad effectiveness, a measure that captured the extent to which youth found the campaign ads to be relevant, persuasive, and impactful. There is no established norm in the literature to serve as a benchmark for interpreting the perceived ad effectiveness ratings. However, two observations seem to suggest that the current evidence is largely positive. First, all of the tested ads scored above the scale midpoint, which means that youth sentiments about the ads consistently landed on the positive side of the scale. Second, the mean ratings obtained in this research were comparable to those obtained in previous research applying the same scale to cessation ads shown to be effective with adult smokers (Davis et al., 2013; Duke et al., 2014). Recently published population-level evaluation data also showed similar ratings of *The Real Cost* advertisements (Duke et al., 2015).

Although the current data show that *The Real Cost* ads were well received by the youth target audience, no prior research has examined the ability of the perceived ad effectiveness scale to predict subsequent smoking behavior among youth. There is longitudinal evidence in studies of adults that perceived ad effectiveness is able to predict smoking cessation intention and behavior (Davis et al., 2011, 2013; Duke et al., 2014). But this evidence alone is not enough to ensure that similar prospective associations will also be obtained with youth. The current research was not designed to provide direct evidence of the behavioral consequences of perceived ad effectiveness. For exploratory purposes, however, we conducted regression analyses using perceived ad effectiveness to predict smoking beliefs and attitudes with the current data. The results showed strong relationships between perceived ad effectiveness and health/chemical risk beliefs ($\beta = .46$, $p < .001$), loss of control beliefs ($\beta = .40$, $p < .001$), and smoking attitudes ($\beta = -.24$, $p < .001$). To the extent that beliefs and attitude are reliable antecedents of behavior, these relationships provide

suggestive evidence that perceived ad effectiveness may also predict smoking behavior among youth.

Although the perceived ad effectiveness scores for the tested ads were consistently desirable, some variation across ads was also noticeable. In particular, Study 1 tested two different versions of the same ad, Alison. Testing results showed that the first version scored slightly higher than the second version, even though the difference was not striking. Based on this finding, *The Real Cost* made the decision to air only the first version in the campaign. This outcome demonstrates the utility of message pretesting as a decision-facilitating tool in communication campaigns. This particular finding also raises an interesting message design question. The difference between the two versions of Alison had to do with the explicitness of the reference to cigarette smoking. The first version withheld this information until the end of the ad, whereas the second version made it clear from the beginning of the ad that the target issue was cigarette smoking. The difference in ad ratings, although modest, suggests that perhaps some measure of suspense and implicitness could serve to better retain youth attention and interest in tobacco prevention messaging. Possibilities such as this are worthy topics for future research.

Although perceived ad effectiveness is a useful indicator of the potential impact of the campaign advertisements, a more direct test of ad effects is offered by the comparison between participants with and without exposure to *The Real Cost* ads on smoking beliefs and attitudes. The data showed a clear pattern across the belief and attitude outcomes. Compared to those in the control condition, those assigned to view campaign ads perceived greater health/chemical risks and a greater likelihood of losing control in life as a result of smoking. They also reported more negative attitudes toward smoking. Preliminary analyses showed that these differences were consistent across all three studies. These results join the favorable ad ratings to afford the campaign reasonable confidence that wide dissemination of the ads may work to move youth beliefs and attitudes in a positive direction and eventually lead to reduced smoking in the target population.

*The Real Cost* seeks to influence two high-risk groups through its messaging: those who are experimenting with cigarette smoking and those who are at risk for initiating smoking. A reasonable question can be asked as to whether the same campaign strategy can effectively influence both target groups. This question is of both theoretical and practical significance. On the theoretical side, the essence of the question is whether the same set of motivators underlie smoking decision making for both groups and thus can be addressed by the same messaging system. On the practical side, the question centers on the tradeoff between impact and efficiency. If targeting both groups in one single campaign can achieve the same outcomes as investing in two separate campaigns, then vast amounts of resources can be conserved by pursuing the former option. In this research, we compared the two target groups in terms of both perceived ad effectiveness ratings and the effects of ad exposure on smoking beliefs and attitudes. There was no significant group difference in perceived ad effectiveness; neither was there any interaction between target groups and ad exposure on health/chemical risk beliefs or smoking attitudes. Only in the case of loss of control beliefs did we see an interaction that showed greater positive ad effects among experimenters than

among at-risk nonsmokers. This general pattern of findings suggests that including both target groups in one comprehensive campaign is a justifiable decision.

Like in all research, findings of the current studies have to be appraised in light of their limitations. First, all three studies were conducted in a single session with no behavioral follow-up. Although this design is typical of message pretesting studies, it nonetheless cautions against extrapolating the current findings to a potential campaign effect on behavior change. Second, these studies only examined a limited set of smoking beliefs. The measure of attitude was also relatively simple. A sharp focus on these particular measures is justifiable given the campaign's approach. Nevertheless, a wider range of outcomes and more elaborate measurements would probably improve the current research's ability to fully capture the potential efficacy of the campaign messages under investigation.

Despite these limitations, the current evidence shows sufficient clarity and consistency to suggest that the messages developed for *The Real Cost* have the potential to positively impact youth smoking beliefs and attitudes. Encouraged by these preliminary findings, FDA has aired all but one of the tested ads in the campaign (see the earlier discussion on the excluded ad). A longitudinal, population-level evaluation study is currently under way to assess campaign effects (Duke et al., 2015). Convergence between the evaluation data and the current evidence will further strengthen the case for the effectiveness of these messages and the campaign strategies they represent.

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## Table 1

Sample characteristics.

| Characteristic | Study 1 (*N* = 1,387) | Study 2 (*N* = 620) | Study 3 (*N* = 1,251) |
|---|---|---|---|
| Age (%) | | | |
| 13 | 17.4 | 20.0 | 13.5 |
| 14 | 20.8 | 17.3 | 15.0 |
| 15 | 18.1 | 22.4 | 23.7 |
| 16 | 21.1 | 24.2 | 27.4 |
| 17 | 22.5 | 16.1 | 20.5 |
| Gender (%) | | | |
| Male | 51.5 | 46.6 | 50.7 |
| Female | 48.5 | 53.4 | 49.3 |
| Race/ethnicity (%) | | | |
| Non-Hispanic White | 41.9 | 57.1 | 50.4 |
| Non-Hispanic Black | 20 | 18.3 | 16.1 |
| Hispanic | 19.8 | 35.3 | 26.3 |
| Non-Hispanic other | 7.7 | 4.0 | 8.3 |
| Risk status (%) | | | |
| Experimenter | 68.8 | 49.8 | 50.0 |
| At-risk nonsmoker | 31.2 | 50.2 | 50.0 |
| Living with smoker(s) (%) | | | |
| Yes | 52.4 | 51.6 | 52.3 |
| No | 47.6 | 48.4 | 47.7 |
| Close friends smoke (%) | | | |
| 0 | 19.7 | 32.4 | 30.0 |
| 1 | 30.3 | 25.9 | 23.8 |
| 2 | 29.6 | 26.3 | 26.7 |
| 3 | 13.2 | 7.8 | 11.4 |
| 4 | 7.2 | 7.6 | 8.0 |
| Condition (%) | | | |
| Exposure | 85.8 (6 ads) | 65.8 (2 ads) | 85.6 (6 ads) |
| Control | 14.2 | 34.3 | 14.4 |

## Table 2

Campaign ads.

| Study | Ad title | Description | Theme |
|---|---|---|---|
| 1 | Skin | A young woman enters a convenience store and pulls off some of her skin to pay for a pack of cigarettes. | Health risks |
| | Tooth | A young man enters a convenience store and uses pliers to pull out a tooth to pay for a pack of cigarettes. | Health risks |
| | Tooth (Menthol) | A young man enters a convenience store and uses pliers to pull out a tooth to pay for a pack of menthol cigarettes. | Health risks |
| | Bully | A tiny bully pushes a male youth into lockers and drags him outside, takes money from a female youth, and forces a youth to pause a video game to smoke. | Loss of control |
| | Alison 1 | A female youth in a cafeteria speaks about a controlling presence in her life, and only at the end of the ad is it clear that she is talking about cigarettes. | Loss of control |
| | Alison 2 | A female youth in a cafeteria speaks about a negative, controlling presence in her life that showed up right about the time she started using cigarettes. | Loss of control |
| 2 | Contract | A female youth talks about giving up her freedom and relinquishing control over her life by signing a contract that rolls up and turns into a cigarette. | Loss of control |
| | 7000 | Thousands of creatures emerge from a forest and turn into a toxic mix of 7,000 chemicals in cigarette smoke as a guy smokes a cigarette. | Chemicals |
| 3 | Skinny Jeans | A male youth in a skateboard park explains he does not smoke because he cannot fit a pack of cigarettes in his skinny jeans. | Health risks/chemicals |
| | Fingers | A female youth on the bleachers explains that she will not smoke because she does not want to break up her finger puppets by holding a cigarette. | Health risks/chemicals |
| | Band | A tiny bully drags a drummer away from practicing with his band in a garage to smoke cigarettes. | Loss of control |
| | Dance | A tiny bully drags a guy away from his dancing with his date at a school dance to go outside and smoke. | Loss of control |
| | Found It | A scary creature crawls on a guy under the bleachers with his friends before running into a cigarette pack. | Health risks/chemicals |
| | Science Class | A scary creature escapes being dissected by a teacher in science class and crawls into a cigarette pack. | Health risks/chemicals |

**Table 3**

Perceived effectiveness of the campaign ads.

| Study | Ad title | *M* | *SD* | α | *n* |
|---|---|---|---|---|---|
| 1 | Skin | 3.62 | .86 | .90 | 463 |
| | Tooth | 3.60 | .84 | .90 | 370 |
| | Tooth (Menthol) | 3.60 | .86 | .89 | 353 |
| | Bully | 3.57 | .84 | .90 | 449 |
| | Alison 1 | 3.50 | .97 | .93 | 367 |
| | Alison 2 | 3.40 | .97 | .92 | 378 |
| 2 | Contract | 3.85 | .81 | .90 | 205 |
| | 7000 | 3.86 | .83 | .89 | 202 |
| 3 | Skinny Jeans | 3.55 | .89 | .91 | 181 |
| | Fingers | 3.56 | .90 | .89 | 179 |
| | Band | 3.68 | .87 | .91 | 178 |
| | Dance | 3.69 | .83 | .90 | 181 |
| | Found It | 3.83 | .81 | .89 | 181 |
| | Science Class | 3.87 | .81 | .90 | 177 |
| *M* | | 3.66 | | | |

**Table 4**

Descriptive statistics for smoking beliefs and attitude.

| | Study 1 | | | Study 2 | | | Study 3 | | |
|---|---|---|---|---|---|---|---|---|---|
| | ***M*** | ***SD*** | **α** | ***M*** | ***SD*** | **α** | ***M*** | ***SD*** | **α** |
| Health/chemicals | 3.87 | 0.86 | .85 | 4.11 | 0.81 | .86 | 4.07 | 0.87 | .91 |
| Loss of control | 3.56 | 1.03 | .78 | 3.46 | 1.08 | .67 | 3.57 | 1.10 | .76 |
| Attitude | 1.77 | 1.19 | .40 | 1.96 | 0.87 | .70 | 1.99 | 0.90 | .67 |

## Table 5

Effect of ad exposure and smoking status on risk beliefs and attitude.

| | Ad exposure | | Smoking status | |
|---|---|---|---|---|
| | **No exposure** | **Exposure** | **At-risk nonsmoker** | **Experimenter** |
| Health/chemicals | 3.87 (.04)[a] | 4.04 (.02)[b] | 4.01 (.03)[a] | 3.90 (.03)[b] |
| Loss of control | 3.29 (.04)[a] | 3.62 (.02)[b] | 3.58 (.04)[a] | 3.33 (.03)[b] |
| Attitude | 2.11 (.04)[a] | 1.80 (.02)[b] | 1.88 (.03)[a] | 2.03 (.03)[b] |
| Perceived effectiveness | | | 3.68 (.03)[a] | 3.65 (.02)[a] |

*Note*. For each group comparison on each outcome, cell means with different superscripts were statistically different at the .05 level.