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## Can Corrective Ad Statements Based on *U.S. v. Philip Morris USA Inc.* Affect Consumer Beliefs about Smoking?

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# Can Corrective Ad Statements Based on *U.S. v. Philip Morris USA Inc.* Affect Consumer Beliefs About Smoking?

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*To comply with the court's ruling in U.S. v. Philip Morris USA Inc., tobacco companies must fund a large advertising campaign to "correct" smoking beliefs about which consumers may have been misled as a result of past deceptive practices of tobacco companies. The authors use an ad copy experiment to examine (1) the effects of different versions of corrective ad statements that plaintiff intervenors submitted to the court on multi-item belief measures and (2) the impact of the ad versions and beliefs on general attitudes toward smoking across current adult smokers and nonsmokers. The tested ad versions include a copy-only control condition, a copy-with-graphic-visual condition, and a version with a potentially distracting visual. The results indicate that the corrective statements in advertisements can have a positive effect on antismoking beliefs of focal interest in the case and that the test advertisements affect some beliefs more strongly than others. The authors discuss potential policy implications and limitations and provide suggestions for further research.*

*Keywords:* smoking, smoking beliefs, attitude toward smoking, corrective statements in advertising, *U.S. v. Philip Morris USA Inc.*

An estimated 46 million adults in the United States currently smoke, making tobacco use a challenging and widespread public health problem (Centers for Disease Control and Prevention [CDC] 2010). The CDC (2010) reports that cigarette smoking is responsible for approximately 443,000 premature deaths annually. In *U.S. v. Philip Morris USA Inc.* (2006a, b), a United States District Court ordered the use of corrective statements in advertising and promotion to augment consumer knowledge and beliefs about smoking by targeting potential misperceptions related to the past marketing and promotion practices of tobacco companies. According to the court's judgment

(*U.S. v. Philip Morris USA Inc.* 2006b, p. 2), tobacco companies were required to do the following:

Issue corrective statements in major newspapers, on the three leading television networks, on cigarette "onserts," and in retail displays, regarding (1) the adverse health effects of smoking; (2) the addictiveness of smoking and nicotine; (3) the lack of any significant health benefit from smoking "low tar," "light," "ultra light," "mild," and "natural" cigarettes; (4) defendants' manipulation of cigarette design and composition to ensure optimum nicotine delivery; and (5) the adverse health effects of exposure to secondhand smoke.

The court's decision requires use of a marketing communications campaign with the goal of mitigating deception or inaccurate consumer beliefs and thwarting any future deceptive marketing practices that could contribute to or encourage tobacco use. Drawing directly from this litigation and the court's decision (see *U.S. v. Philip Morris USA Inc.* 2006b), we conduct this research with the purpose of gaining a better understanding of how corrective print ad statements might influence consumer beliefs about smoking. Specifically, we are interested in the following questions:

1. Is there support for the notion that current consumers have been misled or deceived by tobacco companies regarding some or all of the beliefs about smoking, and are the results similar across all the beliefs?
2. Do corrective statements in advertisements offered by the plaintiff intervenors (hereinafter referred to simply as "intervenors") affect the focal belief themes, and do advertise-

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ments that include only text differ from those that include text and visual elements related to smoking?

3. Which beliefs differ between smokers and nonsmokers, and how do the corrective statements and smoking beliefs influence general attitudes toward smoking across smokers and nonsmokers?

### Brief Overview of *U.S. v. Philip Morris USA Inc.*

In August 2006, the U.S. District Court for the District of Columbia issued its memorandum opinion and order in which defendants were found liable for massive violations of the Racketeer Influenced and Corrupt Organizations Act (see *U.S. v. Philip Morris USA Inc.* 2006a, b). Defendants in the case included Philip Morris USA Inc., R.J. Reynolds Tobacco Company, Brown & Williamson, Lorillard Tobacco Company, Liggett Group, American Tobacco Company, Altria Group, B.A.T. Industries, the Council for Tobacco Research, and the Tobacco Institute. The court concluded that over at least the past 50 years, there had been a myriad of unlawful activities, and it “found that Defendants had engaged in a deliberate, decades-long campaign to deceive the public concerning the adverse health effects of smoking, cigarette addictiveness and Defendants’ manipulation of cigarette contents to enhance addictiveness, the effects of secondhand smoke, and the true health effects of ‘light’ cigarettes” (*U.S. v. Philip Morris USA Inc.* 2006c, p. 3). The court found that “each and every one of these defendants repeatedly, consistently, vigorously—and falsely—denied the existence of any adverse health effects from smoking” (*U.S. v. Philip Morris USA Inc.* 2006b, p. 330). The court also concluded that the defendants “made false, deceptive, and misleading public statements about cigarettes and smoking from at least January 1954” (*U.S. v. Philip Morris USA Inc.* 2006b, p. 1632).

To address the past “false and misleading statements,” intervenors were directed to propose corrective statements to be used in various communications media. The intervenors in the case included the American Cancer Society, American Heart Association, American Lung Association, Tobacco-Free Kids Action Fund, Americans for Nonsmokers’ Rights, and National African American Tobacco Prevention Network. The court instructed the intervenors to propose copy that contained all five corrective statements for use in print advertisements and Web sites. As the court directed, the intervenors developed and proposed a print advertisement that directly addressed all specific beliefs the court noted in *U.S. v. Philip Morris USA Inc.* (2006c, p. 6). The court ordered six major tobacco companies to have full-page advertisements published in the first section of the Sunday edition of 35 major newspapers on a one-time basis for each company. The full-page advertisements were to be placed in these 35 newspapers following a staggered schedule in which the advertisements were run once a month for six consecutive months.

On May 22, 2009, the U.S. Court of Appeals (District of Columbia) upheld a trial judge’s verdict, including the use of corrective statements in advertisements, against the defendants (*U.S. v. Philip Morris USA Inc.* 2009). On February 19, 2010, the government and Philip Morris sepa-

rately asked the U.S. Supreme Court to review the racketeering verdict against the defendants that the appeals court affirmed, but the Supreme Court declined to hear any appeals on June 28, 2010 (Duff 2010). In upholding the original court’s decision, the May 2009 opinion by the U.S. Court of Appeals noted that the corrective statements must contain “factual and uncontroversial information,” though the court did not specify the exact corrective statements that would be required (*U.S. v. Philip Morris USA Inc.* 2009, p. 81). The corrective statements the intervenors submitted to the court appear to fit the criteria specified by the court of appeals. The intervenors recommended that the court should establish criteria for the execution of the advertisements, including consultation with experts and performance of market research to test the effectiveness of proposed communications (*U.S. v. Philip Morris USA Inc.* 2006a, c). Therefore, an initial test of the proposed corrective statements in the print advertisements the intervenors offered is one of the primary objectives of this research. In addition, and beyond the relevance to this specific case, most of these beliefs are among those that antitobacco researchers view as important and have long had an interest (e.g., Andrews et al. 2004; Ferraro 1990; Kozlowski et al. 1999; Murray, Prokhorov, and Harty 1994; Rozin and Singh 1999; Tangari et al. 2007).

### Corrective Advertising Overview

Because this case pertains to deceptive and misleading public statements about cigarettes and smoking made by tobacco companies over some five decades, the corrective statements and campaign the court ordered differ somewhat from many of the corrective advertising cases previously addressed in the marketing literature (Mazis 2001; Wilkie, McNeill, and Mazis 1984). However, several aspects of the corrective advertising literature are relevant to this case. Corrective advertising, originally applied in the 1970s by the Federal Trade Commission, is intended to correct past deceptions, provide truthful information, and deter future use of deceptive advertisements (Wilkie, McNeill, and Mazis 1984). Although research methodology can present challenges (Mazis 2001), studies have shown that corrective advertisements can be effective and are often capable of altering beliefs about a product and its attributes (Armstrong, Gurol, and Russ 1983; Lamb and Stutts 1979). However, it should also be noted that corrective advertising may not be sufficient to completely correct consumer misperceptions, can at times have unintended consequences, and may take years to change some misperceptions (Armstrong, Gurol, and Russ 1983; Darke, Ashworth, and Ritchie 2008; Mazis 2001; Wilkie, McNeill, and Mazis 1984).

Research has shown the importance of understanding consumers’ current beliefs when creating a corrective advertising campaign (Armstrong, Gurol, and Russ 1983), a relevant issue in studying the beliefs related to the case we focus on herein. Five of the consumer beliefs we test in this study come directly from the corrective statement themes the court set forth in *U.S. v. Philip Morris USA Inc.* (2006b). These include the following beliefs:

- Adverse health effects of smoking;

- Smoking/nicotine addictiveness;
- Lack of health benefits from smoking “low-tar,” “light,” “ultralight,” “mild,” and “natural” cigarettes;
- Manipulation of cigarette design and composition to ensure optimum nicotine delivery; and
- Health effects of secondhand smoke.

We also examine current consumer beliefs regarding the deceptiveness of tobacco company marketing practices. This theme is related to the entire *U.S. v. Philip Morris USA Inc.* (2006b) litigation and also has been studied in recent research on antismoking advertising campaigns (e.g., Netemeyer, Andrews, and Burton 2005; Pechmann et al. 2003). In addition, many of the focal beliefs in this case (e.g., health effects of smoking, health benefits from smoking low-tar or “light” cigarettes) are relevant to prior research on consumer perceptions and beliefs regarding smoking (e.g., Andrews et al. 2004; Ferraro 1990; Kozlowski et al. 1999; Murray, Prokhorov, and Harty 1994; Rozin and Singh 1999; Tangari et al. 2007). However, to our knowledge, no direct information exists on the current levels of consumer beliefs about or attitudes toward the central belief themes in the more than 1600-page case document in *U.S. v. Philip Morris USA Inc.* (2006b).<sup>1</sup>

## Conceptualization and Hypotheses

### Effects of Corrective Statements

Prior research on corrective ad campaigns has shown that if successfully planned and executed, they can be effective and are capable of altering targeted beliefs (Armstrong, Gurol, and Russ 1983; Mazis 2001; Wilkie, McNeill, and Mazis 1984). Moreover, certain antitobacco media campaign themes are capable of positively affecting beliefs for both adolescents (Andrews et al. 2004; Pechmann et al. 2003) and adults (Tangari et al. 2007). Drawing on such findings and on literature pertaining to the potential effects of persuasive communications on beliefs (e.g., Ajzen and Fishbein 1980), in  $H_{1a}$ , we predict that there will be a positive effect on antismoking beliefs for consumers exposed to corrective test advertisements compared with a control group not exposed to such advertisements. However, we anticipate that the effect of the corrective advertisement will vary substantially across the different beliefs. This suggests that though the court would be interested in a direct effect of the advertisement on “correcting” beliefs about which consumers were misled, we contend that the strength of this ad effect will differ across the beliefs, suggesting an interaction. For example, prior research on light/low-tar cigarettes indicates that many consumers may misperceive light cigarettes as being more healthful than regular cigarettes (e.g., Borland 2004; Etter, Kozlowski, and Perneger 2002; Goldberg and Kozlowski 1997; Kozlowski et al. 1998). We predict that after consumers are exposed to a message about

the harmfulness of light cigarettes, they will become more aware of the health risks associated with light cigarettes (Kozlowski et al. 1999). In contrast to beliefs about the light/low-tar cigarettes, other beliefs, such as the adverse health effects and addictiveness of smoking, appear to be well known (e.g., Netemeyer, Andrews, and Burton 2005). Therefore, for these beliefs, there would be less opportunity for changes due to exposure to corrective advertising. Thus, in  $H_{1b}$ , we predict that exposure to the test advertisements will have a more positive effect on the light/low-tar theme than for other themes, such as health consequences or addictiveness of smoking. Formally,

$H_{1a}$ : Exposure to advertisements containing corrective statements will have a positive effect on the antismoking belief themes overall, compared with a control group not exposed to the advertisements.<sup>2</sup>

$H_{1b}$ : Exposure to advertisements containing corrective statements will have a stronger effect on some belief themes than others. Specifically, the advertisements should have a more positive effect on the theme pertaining to the lack of health benefits of light/low-tar cigarettes than on the other belief themes.

### Distracting and Enhancing Visuals

In *U.S. v. Philip Morris USA Inc.* (2006a), the intervenors (on behalf of the United States as plaintiff) offered a version of the corrective statements using an advertisement that contained embedded visuals of both a sky and field and a woman, images that were not related to the copy (see Appendix A) (Campaign for Tobacco-Free Kids 2006).<sup>3</sup> The intervenors argued that defendants would likely choose a similar version of the advertisement in an attempt to reduce the effectiveness of the message theme. As such, the pictures presented in the advertisement would likely serve as distracting peripheral cues to the intended message (Petty and Cacioppo 1986), thereby decreasing its effectiveness in processing the main message arguments about smoking. Indeed, a review of prior research supports this prediction. For example, studies show that dividing attention between information coming from different modalities (e.g., verbal and visual) has a negative impact on encoding ( Craik et al. 1996). Fernandes and Moscovitch (2000) demonstrate that a visual distraction task negatively affects the encoding of an auditory word list. Given this research,  $H_{2a}$  predicts that the inclusion of distracting visuals in the advertisements will decrease the strength of the effect of the corrective advertisements on belief themes compared with the advertisements that do not use distracting visuals.

In contrast, visuals also can potentially enhance the verbal message statements. For example, Argo and Main (2004) identify vividness-enhancing characteristics on

<sup>1</sup>Although it is recognized that this case and the corrective statements proposed for use differ from conventional corrective advertising campaigns, for parsimony, in the remainder of the article, we sometimes use the term “corrective advertisements” or “corrective ad campaign” in reference to the use of corrective statements in advertisements proposed to the court.

<sup>2</sup>The belief measures we developed assess antismoking beliefs using endpoints of “strongly disagree” (1) and “strongly agree” (7), such that corrective statements attempt to increase mean belief levels. For example, for an item such as “Smoking is addictive,” advertisements would attempt to increase agreement with the statement, consistent with the court’s objective.

<sup>3</sup>Note that the copy used in the advertisement in Appendix B is identical to versions we tested in the main study. The copy for all the tested advertisements comes directly from the corrective statements the intervenors proposed.



product warnings as an important determining factor in warning effectiveness. Although the proposed, base corrective print advertisement the intervenors submitted to the court included only copy (*U.S. v. Philip Morris USA Inc.* 2006c), for media such as point-of-purchase counter displays and package inserts, the intervenors recommended the inclusion of graphic visuals. The intervenors noted that the results of several tobacco-related studies suggested that visual warnings “can increase the effectiveness of communications campaigns” (*U.S. v. Philip Morris USA Inc.* 2006c, p. 30).

There is a substantial literature in both marketing and persuasive communications indicating favorable effects of inclusion of visuals in advertising (e.g., Kisielius and Sternthal 1984; Mitchell and Olson 1981). Studies on cigarette warning labels show that visual information that is consistent with verbal warnings can be more effective than verbal warnings alone (e.g., Hammond et al. 2004; Kees et al. 2006; O’Hegarty et al. 2007). For example, Kees and colleagues (2006) find that adding a visual warning that is highly consistent with verbal warnings can decrease the perceived attractiveness of the cigarette package and increase smokers’ intentions to quit smoking over the verbal-only warning. In addition, there is broad conceptual support for “vividness effects,” including dual coding theory (Unnava and Burnkrant 1991), availability valence theory (Kisielius and Sternthal 1984), and differential attention (Taylor and Thompson 1982).

Given the intervenors’ interest in graphic visuals and findings in the marketing and smoking-related literature, H<sub>2</sub> also makes predictions about the effect of including graphic visuals in a corrective advertisement on the smoking belief themes. Specifically, the use of a graphic visual is likely to make the message presented in the advertisement more salient to consumers by illustrating the consequences of smoking (Messaris 1997; O’Hegarty et al. 2007). In turn, the graphic visual has a potentially greater impact on beliefs. On the basis of this rationale, H<sub>2b</sub> predicts that including graphic visuals in antismoking corrective advertising (see Appendix B) will be more effective in influencing beliefs than corrective advertisements that do not include graphic visuals.

In summary, the literature we reviewed suggests that visuals can potentially distract or enhance the focal verbal message. Formally, we predict the following:

H<sub>2</sub>: Compared with advertisements that do not use visuals, (a) the use of distracting visuals in corrective advertisements will decrease the overall strength of effects on the belief themes, and (b) the use of graphic visuals in the advertisements will increase the overall strength of effects on the antismoking belief themes.

### Hypothesized Effects on Beliefs: Differences Between Smokers and Nonsmokers

Although there is a need to examine beliefs of both smokers and nonsmokers in *U.S. v. Philip Morris USA Inc.* (2006b), the court opinion suggests little distinction between the beliefs of smokers and those of nonsmokers. Yet there is a growing body of research examining differences in attitudes and effects of communication vehicles on smokers versus

nonsmokers (e.g., Andrews et al. 2004; Ashley et al. 2000; Koval et al. 2005; Mitchell 1999; O’Hegarty et al. 2007; Peters et al. 2007; Poland et al. 2000; Tangari et al. 2007). In general, beliefs about and attitudes toward smoking are typically negative among nonsmokers (and substantially worse than smokers’ attitudes) (Jamieson and Romer 2001; Ross and Perez 1998). However, we anticipate that the magnitude of the differences across focal belief themes in *U.S. v. Philip Morris USA* and smoking status will not be consistent. For example, from social judgment theory, it is well known that people counterargue or ignore certain messages that conflict with their own behaviors and attitudes (Petty and Cacioppo 1981). Such messages are contrasted with a person’s own salient attitudes and beliefs (e.g., Sherif and Hovland 1961). Moreover, self-perception theory (Bem 1967, 1972) predicts that people often infer their attitudes from observations of their own behavior. Therefore, in line with social judgment and self-perception theory, it can be argued that smokers will discount the negative consequences of their smoking on the health effects of others. This suggests that for the effects of secondhand smoke, antismoking beliefs will be substantially more positive for nonsmokers than for smokers. Similarly, for the deceptiveness belief, in general, smokers would not want to believe that they had been deceived and manipulated by the marketing tactics of tobacco companies, though this would not be a perceptual defense necessary for nonsmokers. Moreover, smokers should be cognizant of the addictiveness of smoking because it fits with their ongoing smoking behavior. As such, we anticipate that there is the least difference between smokers and nonsmokers for the addictiveness belief. Formally, we predict the following:

H<sub>3</sub>: Compared with smokers, nonsmokers will have stronger (i.e., more positive) levels for the focal beliefs in *U.S. v. Philip Morris USA Inc.*, but smoking status and specific belief themes will interact. Specifically, there should be a greater difference between smokers and nonsmokers for beliefs such as tobacco company deceptiveness and secondhand smoke than for beliefs about the addictiveness of smoking.

### Influences on Attitude Toward Smoking

Similar to the rationale we presented for H<sub>3</sub>, in H<sub>4</sub>, we predict that exposure to corrective advertisements will reduce overall attitude toward smoking but that smoking status moderates this influence. Given that attitudes toward smoking are typically negative among nonsmokers (Romer and Jamieson 2001), we expect to find a stronger effect of the advertisement for smokers since there is more opportunity for change because their smoking-related attitudes are more positive (e.g., Ross and Perez 1998). In turn, this should offer greater opportunity for the desired effects of persuasive communications, which is similar to that found for antismoking advertising campaigns (Andrews et al. 2004). Thus, we expect the following:

H<sub>4a</sub>: Exposure to advertisements containing corrective statements will have a negative effect on attitude toward smoking, compared with a control group not exposed to the advertisements, but this effect will be stronger for smokers than for nonsmokers.

H<sub>4b</sub>: There will be a negative effect of the focal antismoking beliefs on attitude toward smoking, beyond that which is explained by ad exposure and smoking status.

H<sub>4c</sub>: The interaction between smoking status and beliefs will explain incremental variance in attitude toward smoking, indicating that the focal beliefs will decrease attitude toward smoking more strongly for smokers.

## Pilot Study

### Purpose and Procedures

The purpose of the pilot study was to test multi-item measures of the six smoking belief themes identified in *U.S. v. Philip Morris USA Inc.* (2006b) and to initially assess consumers' baseline levels of these beliefs. We generated items for the pilot study through a review of the literature (e.g., Andrews et al. 2004; Kozlowski and Pillitteri 2001; Tangari et al. 2007) and then further development.<sup>4</sup> We also designed the pilot study to provide a preliminary assessment of the effects of the proposed corrective ad copy the intervenors offered across the six key antismoking beliefs. The study included three corrective advertising conditions as between-subjects factors: (1) a control in which no advertisement was shown, (2) a proposed corrective advertisement containing copy only, and (3) a corrective advertisement containing the proposed copy (identical to condition 2) and two graphic visuals (relating to focal belief themes) at the bottom of the advertisement.

We obtained the copy-only corrective ad condition directly from the ad copy the intervenors proposed to the court in *U.S. v. Philip Morris USA Inc.* (2006c, p. 6); the copy of this proposed advertisement included all the belief themes described in the "Final Opinion" (*U.S. v. Philip Morris USA Inc.* 2006b). (An example of the ad copy-with-graphic-visual condition used in the pilot and main study appears in Appendix B.) The target corrective test advertisement was positioned between two filler advertisements. We randomly assigned respondents to the different ad conditions, and respondents in the control condition completed only the survey, with no ad exposure (i.e., they were part of a no-exposure control group; Foley and Pechmann 2004; Pechmann and Andrews 2010). There are trade-offs recognized for the selection of control ad groups, which can include choices among purged/"tombstone" advertisements, different advertisements for the same brand, or (as we use here) no-exposure controls (Andrews and Maronick 1995; Pechmann and Andrews 2010). We selected the no-exposure control instead of a purged or different advertisement for the same appeal because, rather than any specific advertisement or campaign, the court's decision was based on the tobacco companies' actions and public statements that occurred over at least five decades, and this provides little

basis for the construction of a control or placebo ad condition. In addition, the entire proposed corrective ad copy contained facts and points on smoking consequences, making it difficult to excise targeted claims or to find a comparable advertisement without such claims (see Andrews and Maronick 1995, p. 306).

Participants in all the conditions in the pilot received the same general instructions. In addition to the general instructions, we asked participants in the ad conditions to carefully read over the provided advertisement and then to answer the questions in the survey. Participants completed a paper-and-pencil survey in the pilot. The study consisted of 226 undergraduate students at a major southern university who received course credit for participating ( $M_{\text{age}} = 23$  years, ranging from 18 to 36). Approximately 40% were men, and 24% were current smokers.

### Pilot Study Measures and Results

Primary outcome variables included the six key belief themes associated with the case. Appendix C provides the multi-item measures of the six themes used in the pilot and main studies. The belief items were all seven-point scales with the endpoints "strongly disagree/strongly agree." Higher means indicate stronger agreement with the theme (i.e., higher means indicate stronger agreement with adverse health effects from smoking, the addictiveness of smoking, and so forth).

Appendix C also provides coefficient alpha estimates that assess the reliability of pilot study measures; these range from .78 to .93 and thus are considered acceptable (Nunnally and Bernstein 1994). We then performed a mixed analysis of variance using the corrective ad manipulation as a between-subjects factor and the six belief themes as a within-subjects factor (Creyer, Kozup, and Burton 2002). Then, we performed follow-up tests and contrasts to test ad condition effects between different ad conditions for each belief theme; these preliminary findings appear in Table 1, Panel A.

A test of effects of the corrective advertisements on smoking beliefs shows a main effect of ad condition ( $F(2, 223) = 11.82, p < .001$ ). In addition, the interaction between beliefs and ad condition is significant ( $F(10, 1115) = 3.07, p < .01$ ). Given the interaction, Table 1, Panel A, shows the results of univariate analyses of variance and follow-up contrasts for each of the belief themes. All univariate F-values are significant (with all  $p < .05$ ), except for the deceptiveness belief ( $p = .09$ ), and the means of the beliefs are all higher for the corrective ad conditions than for the control condition with no advertisement. We also performed contrasts for each belief to examine whether the advertisements with graphic visuals strengthen the belief themes compared with the corrective advertisements that do not use visuals. As Table 1, Panel A, shows, there are significant differences for the beliefs regarding the health effects of smoking ( $p < .05$ ), addictiveness of smoking ( $p < .05$ ), and second-hand smoke ( $p < .05$ ). The differences for the other beliefs are not significant.

<sup>4</sup>We conducted a separate initial pretest with 55 participants (50% men, 50% women) to generate and refine the belief measures used in the pilot. We used preliminary analyses, assessment of face validity, and reliability tests to reduce the number of belief theme items and to develop reliable multi-item measures. For these pretest data, coefficient alpha estimates for each of the six belief measures exceeded .70 (ranging between .76 and .93) and thus are considered acceptable for our more extensive pilot study (Nunnally and Bernstein 1994).

**Table 1. Effects of the Corrective Advertisements on Antismoking Belief Measures**

A: Pilot Study					
	No Advertisement (Control) <sup>a</sup>	Ad Copy Only <sup>b</sup>	Ad Copy with Graphic Visual <sup>c</sup>		F-Values
Health effects	6.26 <sup>c</sup>	6.38 <sup>c</sup>	6.62 <sup>a,b</sup>		5.83**
Addictiveness	5.83 <sup>c</sup>	5.99 <sup>c</sup>	6.28 <sup>a,b</sup>		5.73**
Secondhand smoke	6.07 <sup>c</sup>	6.20 <sup>c</sup>	6.49 <sup>a,b</sup>		3.98*
Deceptiveness	5.42 <sup>b</sup>	5.85 <sup>a</sup>	5.57		2.18
Cigarette manipulation	5.49 <sup>b,c</sup>	5.85 <sup>a</sup>	5.99 <sup>a</sup>		5.44**
Light/low tar	4.73 <sup>b,c</sup>	5.51 <sup>a</sup>	5.70 <sup>a</sup>		12.94**
B: Main Study					
	No Advertisement (Control) <sup>a</sup>	Ad Copy Only <sup>b</sup>	Ad Copy with Graphic Visual <sup>c</sup>	Ad Copy with Distracting Visual <sup>d</sup>	F-Values
Health effects	5.81 <sup>b,c,d,e</sup>	6.07 <sup>a</sup>	6.07 <sup>a</sup>	6.18 <sup>a</sup>	2.36*
Addictiveness	6.19 <sup>d</sup>	6.25	6.13 <sup>d</sup>	6.41 <sup>a,c</sup>	1.75
Secondhand smoke	5.36 <sup>c,e</sup>	5.52	5.76 <sup>a</sup>	5.72	1.42
Deceptiveness	4.88 <sup>b,c,d,e</sup>	5.50 <sup>a,d</sup>	5.70 <sup>a</sup>	5.89 <sup>a,b</sup>	7.53**
Manipulation	5.28 <sup>b,c,d,e</sup>	5.81 <sup>a,d</sup>	5.89 <sup>a</sup>	6.15 <sup>a,b</sup>	7.41**
Light/low tar	5.32 <sup>b,c,d,e</sup>	5.95 <sup>a</sup>	6.08 <sup>a</sup>	5.95 <sup>a</sup>	7.86**
Smoking attitude	3.14 <sup>c,d,e</sup>	2.72	2.23 <sup>a</sup>	2.59 <sup>a</sup>	4.10**

\* $p < .05$ .\*\* $p < .01$ .

Notes: Numbers are belief means based on seven-point scales. Increases in these belief means are consistent with the goal of the corrective advertisements. For belief levels in which the ad condition had a significant effect, superscripted letters indicate significant differences for follow-up contrasts between the ad conditions. For example, the mean for belief in health effects for the advertisement with both copy and the graphic visual is significantly different ( $p < .05$ ) from the means for the no-advertisement control and the ad copy only, but the control and the ad copy only are not significantly different. A superscripted "e" indicates that the control is significantly different from the combined corrective ad conditions.

## Main Study

### Purpose

The purpose of the pilot study was to develop and use multi-item measures to assess the six focal beliefs related to *U.S. v. Philip Morris USA Inc.* and to test whether the corrective advertisements the intervenors submitted to the court, or other corrective advertisements that use the proposed copy, could potentially influence these key beliefs. In general, the results indicate that corrective advertisements can have a favorable overall effect, relative to a control condition with no advertisement. However, a potential limitation of this pilot study is its use of student respondents ( $M_{\text{age}} = 23$  years). In addition, although there is no primary differentiation between smokers and nonsmokers in *U.S. v. Philip Morris USA Inc.* (2006b), a major goal for many public health advocates would be to influence the antismoking beliefs and attitudes of current smokers. Thus, in our main study, we test the hypotheses on an adult sample comprised of both smokers and nonsmokers. We also perform a hierarchical analysis of the joint effects of the corrective ad exposure and focal beliefs in *U.S. v. Philip Morris USA Inc.* on general attitudes toward smoking. Finally, we include an additional advertisement the intervenors submitted to the court (on behalf of the United States as plaintiff), which offered a version of the corrective statements that contained potentially distracting visual elements (Campaign for Tobacco-Free Kids 2006). The advertisement we used for this study had potentially distracting visuals that were iden-

tical to the version the intervenors submitted, but we included the ad copy the intervenors proposed for the base corrective advertisement.<sup>5</sup>

### Main Study Methodology

#### Design, Procedure, and Sample

The experimental design for the main study was a 4 (corrective ad condition)  $\times$  2 (smoker status)  $\times$  6 (belief theme) mixed design. The corrective ad condition consisted of four levels: a no-exposure control condition (with no corrective ad), a copy-only ad condition, a copy-with-graphic-visual ad condition, and a copy-with-distracting-visual ad condition. Both visual corrective ad conditions were identical to the copy-only condition, with the exception of the inclusion of the visuals. Belief theme was a within-subjects factor consisting of the measures of the six different belief themes. We obtained the copy for the corrective advertisements used in the study directly from the proposed corrective statements the intervenors for *U.S. v. Philip Morris USA Inc.* (2006c) submitted, and each advertisement included in the copy the specific beliefs noted in the case (2006a, b). The graphic visual we used in this study is similar to those the intervenors recommended and those used on tobacco

<sup>5</sup>The corrective advertisements we used in this study were based directly on what the intervenors proposed. The corrective statements in the advertisements address the specific beliefs addressed in the "Final Judgment and Remedial Order" (*U.S. v. Philip Morris USA Inc.* 2006a), but the exact corrective statements and advertisements that may be implemented have not yet been established.



packages in the European Union. The distracting visual was in the documents the intervenors submitted to the court in *U.S. v. Philip Morris USA Inc.* (Campaign for Tobacco-Free Kids 2006). Ad stimuli used in the main study appear in Appendixes A and B.

Participants in the study were 390 adult smokers and nonsmokers. The average age of the participants was 43 years ( $SD = 14$  years; range = 18–87 years), and the median annual income of participants was \$35,000–\$50,000. Approximately 56% of the sample were women. In addition, the sample was balanced between current smokers (51%) and nonsmokers (49%), given smoking status as a factor in the study and the desire to have approximately equal cell sizes for the experimental design.<sup>6</sup> We set four age quotas (i.e., 18–31 years, 32–44 years, 45–57 years, and 58+ years), based on U.S. Census Bureau data, to help ensure representative samples in all age groups 18 years and older. We recruited participants through a major online marketing research service and administered the study online.

After successful screening for minimum age (18 years), sex, smoking status, age quotas, and study consent, we randomly assigned respondents to one of the four ad treatment conditions, and they responded to the study measures. We provided participants in all the ad conditions, including participants in the control condition who were not exposed to an advertisement (Andrews and Maronick 1995), identical information indicating that they were participants in a national study and that they would be asked questions about their opinions and beliefs about smoking. We did not provide respondents with any information regarding the court case. As in the pilot study, we asked respondents in the ad conditions to read over the advertisement carefully and then to answer the questions in the survey. After completing the measures section, participants answered some basic demographic questions and then were thanked for their time. The methodology and presentation of ad treatments and measures online were consistent with generally accepted procedures for ad copy testing (Maronick 1991; Pechmann and Andrews 2010).

### Measures

We employed the six belief measures developed in the pretest and tested in the pilot study in the main study (for measures and reliability estimates, see Appendix C). In addition, the main study included a standard three-item measure of attitude toward smoking (Ajzen and Fishbein 1980) and a two-item measure used in combination to determine participants' smoking status (Netemeyer, Andrews, and Burton 2005) (see Appendix C). Because the main study tests the relative efficacy of an advertisement featuring less relevant visuals that potentially distract from the ad message, manipulation check items included whether pictures in the ad conditions were perceived as appropriate/

<sup>6</sup>We also calculated weighted means for the belief themes to match the ratio of smokers (20%) and nonsmokers (80%) in the United States (CDC 2010). The means are as follows: health effects = 6.24, addictiveness = 6.31, secondhand smoke = 5.89, deceptiveness = 5.84, manipulation = 5.95, and light/low tar = 5.95. Weighted means for each ad condition are available on request from the first author.

relevant to the text featured in the advertisements and whether the pictures distracted from the ad message. We measured relevance with a three-item, seven point scale ( $\alpha = .87$ ) anchored by “strongly disagree/strongly agree.” Items appear in Appendix C.

## Results

### Initial Smoking Belief Levels and Corrective Ad Effects

#### Manipulation Check

As we expected, the participants rated the graphic disease pictures as more relevant to the ad copy ( $M = 5.89$ ;  $F = 48.73$ ,  $p < .01$ ) than the ad the intervenors presented, which contained the distracting pictures of a woman and a blue sky with clouds ( $M = 4.27$ ). As we also expected, participants rated the “blue sky” advertisement as more distracting from the ad message ( $M = 3.09$ ;  $F = 10.65$ ,  $p < .01$ ) than the ad featuring graphic disease pictures ( $M = 2.21$ ).<sup>7</sup>

#### Belief Levels and Corrective Ad Effects

To test the hypothesized results on strength of the belief measures, we used a mixed analysis of variance with ad condition and smoking status as between-subjects factors and the six different belief themes as a within-subject factor. The results for the three-factor, mixed analysis of variance appear in Table 2, and the means for each of the beliefs across conditions appear in Table 3.  $H_{1a}$  and  $H_{1b}$  predict that exposure to the corrective advertisements will influence the belief themes overall, but the strength of the effect will vary across beliefs. As Table 2 shows, the main effect of ad condition is significant ( $p < .01$ ), and the interaction between the ad condition and belief themes is also significant ( $p < .01$ ). The pattern of findings suggests that there is an overall favorable effect of the corrective advertisement, but the ad conditions have a stronger influence on some belief themes than on others. These findings offer support for  $H_{1a}$  and  $H_{1b}$ . A plot of the relevant mean values

<sup>7</sup>Note, however, that the mean for the distracting advertisement is relatively low ( $M = 3.09$ ). Nevertheless, it is significantly more distracting than the advertisement featuring the disease pictures ( $M = 2.21$ ;  $F = 10.65$ ,  $p < .01$ ), permitting a test of the distracting visual condition.

**Table 2.** Main Study: Effects of Corrective Advertisements and Smoking Status on Antismoking Beliefs

Independent Variables	F-Value	p-Value
<b>Main Effects</b>		
Ad condition	6.79	<.001
Smoker status (SS)	45.23	<.001
Smoking beliefs	34.85	<.001
<b>Interaction Effects</b>		
Beliefs $\times$ advertisement	3.13	<.01
Beliefs $\times$ SS	13.61	<.001
Advertisement $\times$ SS	1.09	.35
Beliefs $\times$ advertisement $\times$ SS	.63	.83



**Table 3. Means for Corrective Advertisements on Antismoking Belief Measures for Smokers and Nonsmokers**

	No Advertisement (Control)		Copy-Only Advertisement		Ad Copy with Graphic Visual		Ad Copy with Distracting Visual	
	Smoker	Nonsmoker	Smoker	Nonsmoker	Smoker	Nonsmoker	Smoker	Nonsmoker
Health effects	5.41	6.22	5.83	6.39	5.70	6.44	5.96	6.39
Addictiveness	6.01	6.37	6.14	6.39	6.01	6.24	6.38	6.43
Secondhand smoke	4.56	5.88	5.08	6.09	5.28	6.23	5.35	6.07
Deceptiveness	4.06	5.71	4.99	6.16	5.21	6.19	5.55	6.19
Cigarette manipulation	4.81	5.77	5.65	6.03	5.67	6.11	6.01	6.28
Light/low tar	5.09	5.55	5.84	6.09	5.88	6.29	5.83	6.07

appears in Figure 1. The corrective ad factor has a significant effect on light/low-tar beliefs, company deceptiveness, cigarette manipulation ( $p < .01$ ), and health effects ( $p < .05$ ), and it has a nonsignificant effect on addictiveness and secondhand smoke.

To test the effects of different corrective ad conditions, we performed follow-up contrasts for the belief types; the results appear in Table 1, Panel B. The results indicate that beliefs were stronger in the combined corrective ad conditions than in the no-exposure control condition (all  $p < .05$  or better), the only exception being addictiveness. In addition, note that the belief means in the no-exposure control condition are all relatively high, given the use of seven-point scales.

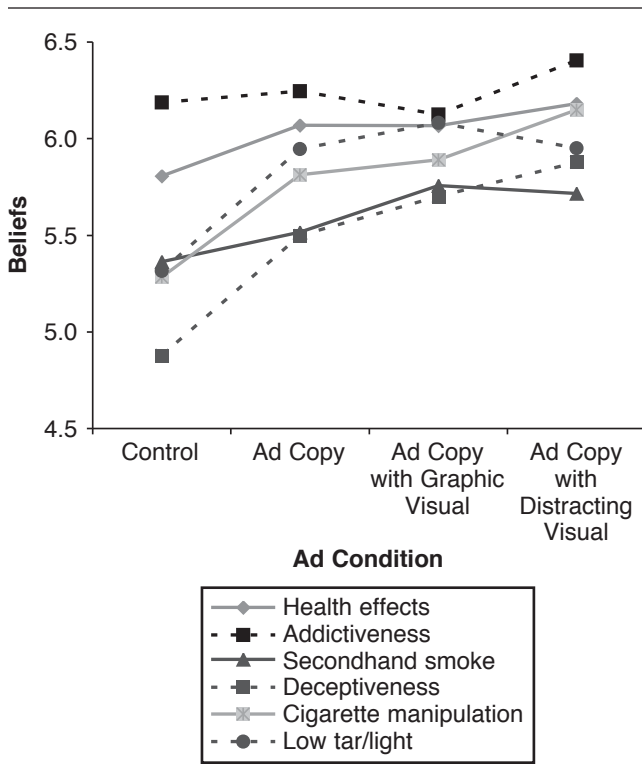
$H_2$  predicts that the distracting visual will reduce effects relative to the alternative corrective ad conditions and that the inclusion of relevant graphic visuals will increase the

strength of effects. As is evident in the pattern of means in Table 1, Panel B, and in Figure 1, there is little support for this prediction. Although the advertisement including a graphic visual had the desired effect on all beliefs except addictiveness when compared with the no-exposure control condition, the pattern of means suggests that it is not (significantly) more influential in strengthening the beliefs than the copy-only corrective advertisement. As Table 1, Panel B, shows, in general there was a significant difference between the advertisement with the distracting visual and the control condition, but the means for the distracting visual were not reduced relative to the means for the copy-only ad condition.<sup>8</sup>

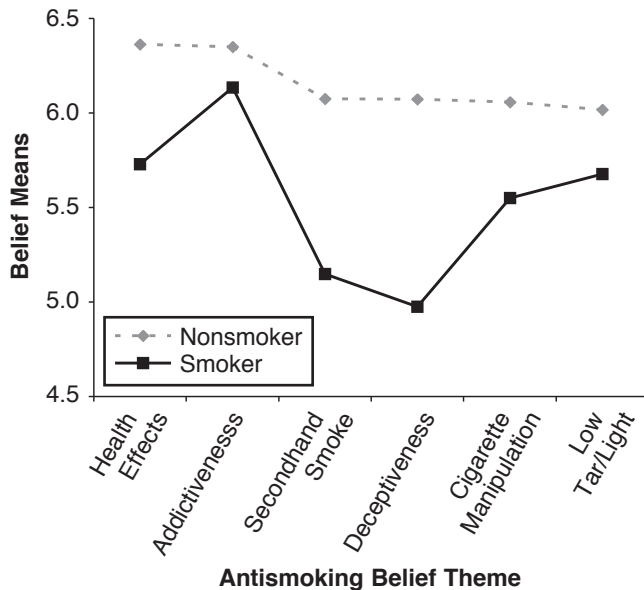
$H_3$  predicts that though antismoking beliefs should be weaker in general for smokers than for nonsmokers, there will be stronger differences between smokers and nonsmokers for beliefs such as secondhand smoke and deceptiveness. Consistent with this prediction, there is a significant interaction between antismoking beliefs and smoking status. As Figure 2 shows, although there is a small difference in addictiveness beliefs between smokers and nonsmokers, there are larger, more substantial differences ( $p < .0001$ ) between beliefs regarding secondhand smoke and tobacco company deception. In general, the results in Figure 2 suggest that there is much greater variance across the focal belief types for smokers than for nonsmokers.

### Effects on Overall Attitudes Toward Smoking

$H_4$  examines the direct effects of beliefs, the corrective ad exposure, and smoking status, in addition to the interactions of ad exposure and smoking status and beliefs. To test  $H_4$ , we performed a hierarchical regression with overall attitude toward smoking as the dependent variable. Given the similarity in the effects of three corrective ad conditions (see Table 1, Panel B, and Figure 1), we combined the three different ad conditions into a corrective-ad-exposure condition (coded as 1) and the no-exposure control (coded as 0) that is consistent with current market status if no corrective campaign occurs. For the belief measure, we first examined the reliability of a combined belief measure that comprised the indicant for each belief theme. This summated measure was

**Figure 1. Plots of Means for Effects of Corrective Advertisements on Antismoking Belief Themes**

<sup>8</sup>In addition, as we show in the bottom of Table 1, Panel B, the ad condition significantly influenced attitude toward smoking ( $F(3, 383) = 5.99$ ,  $p < .01$ ); we address more detailed analyses related to the predicted effects in  $H_4$  subsequently.

**Figure 2. Plots of Means for the Interaction of Smoker Status and Antismoking Beliefs**

reliable ( $\alpha = .85$ ).<sup>9</sup> Then, in line with prior research on potential direct and moderated effects of positively correlated antismoking beliefs (e.g., Andrews et al. 2004), we examined the impact of a single beliefs construct and its interaction with smoker status. We mean-centered the measures before creating the smoker status  $\times$  corrective ad condition and smoker status  $\times$  antismoking beliefs interaction terms (Aiken and West 1991). The results appear in Table 4.

In Model 1, the exposure to the corrective ad decreases attitude toward smoking (as desired), and as we expected, there is a positive relationship between attitude toward

<sup>9</sup>The correlations between each specific belief theme and attitude toward smoking were all significant ( $p < .0001$ ) and ranged between  $-.30$  and  $-.50$ . In addition, as the means in Table 1, Panel B, suggest, there were not significant differences in this study among the three different corrective advertisements for the summated belief measure (all  $p > .10$ ).

smoking and smoking status. In Model 2, we add the anti-smoking belief measure to the model, and the adjusted R-square increases to  $.50$ , explaining an additional 11% of incremental variance relative to Model 1 ( $p$ -value for F-change between Models 1 and 2  $< .001$ ). Then, in Model 3, the addition of the interaction between smoker status and the corrective advertisement is significant ( $p < .05$ ; model  $R^2 = .51$ ). The negative interaction coefficient indicates that the effect of the corrective advertisement on attitude toward smoking is stronger for smokers than for nonsmokers. Finally, in Model 4, we examined the effect of the interaction of smoking status and beliefs on attitude toward smoking and compared the results with the direct effect baseline in Model 2. As Table 4 shows, the interaction coefficient is  $-.03$  and is not significant ( $p > .20$ ). This suggests that compared with the direct effect baseline results in Model 2, antismoking beliefs did not significantly decrease attitude toward smoking to a greater extent for smokers than for nonsmokers. Thus, the hierarchical regression analysis shows significant effects of both corrective ad exposure and beliefs on attitude toward smoking. The results offer support for  $H_{4a}$  and  $H_{4b}$  but not for  $H_{4c}$ .

## Discussion

As Wilkie and Gardner (1974, p. 46) correctly noted more than three decades ago, “Public policy regarding consumer behavior is going to be made, with or without research evidence.” Over the years, there have been calls for greater input from consumer researchers in providing research-based evidence for important policy decisions regarding corrective advertising (Mazis 2001; Wilkie, McNeill, and Mazis 1984). This need for research seems apparent in the court’s ruling in *U.S. v. Philip Morris USA Inc.*, which requires major tobacco companies to implement a multimillion dollar advertising and promotion campaign that focuses on corrective statements based on past deceptive practices and marketing of the tobacco companies. Thus, a primary goal of our study was to examine initial belief levels and gauge whether corrective advertisements, such as those the intervenors specifically recommended (*U.S. v. Philip Morris USA Inc.* 2006c), would affect the focal core consumer beliefs identified in the litigation. Despite the more than

**Table 4. Hierarchical Regression Model Results for Effects of the Corrective Advertisement, Smoker Status, and Beliefs on Overall Attitude Toward Smoking**

Predictors	Standardized Regression Coefficients			
	Model 1: Ad/Smoker Status	Model 2: Smoking Beliefs	Model 3: Moderation Model 1	Model 4: Moderation Model 2
Corrective advertisement	-.16**	-.09**	-.09**	-.09**
Smoker status	.61**	.49**	.49**	.49**
Antismoking beliefs		-.36**	-.36**	-.36**
Smoker $\times$ advertisement			-.06*	—
Smoker $\times$ beliefs				-.03
Adjusted model R <sup>2</sup>	.39**	.50**	.51**	.51**

\* $p < .05$  (one-tailed tests).

\*\* $p < .01$  (one-tailed tests).

Notes: We standardized all coefficients in the table;  $n = 398$ . Smoking status and corrective advertisement are dichotomous variables (1 = smoker/0 = nonsmoker; 1 = corrective ad exposure/0 = no exposure control).

1650-page opinion the court rendered in this controversial case (2006b), there is little focus on current consumer belief levels. The intervenors' recommendation to conduct market research to test potential corrective statements offers further motivation for our studies (*U.S. v. Philip Morris USA Inc.* 2006c, pp. 41–43).

## Overview of the Findings

Initially, we conducted a pilot study to develop and test multi-item measures for each of the belief themes identified in *U.S. v. Philip Morris USA Inc.* (2006b), along with beliefs about tobacco company deceptiveness. We then used these measures in an experiment in which we examined the effects of different versions of print advertisements using advertising copy test principles. We based the advertisements on documents the intervenors submitted at the direction of the court (e.g., American Heart Association, American Cancer Association).

The results indicate that there is a significant effect of exposure to the corrective advertisements (compared with a control group not exposed to the advertisements), but the strength of this effect varies across the different beliefs. Specifically, there are significant effects of the ad factor for the light/low-tar, company deceptiveness, cigarette manipulation, and health effects beliefs. The results suggest that the proposed corrective advertisements can be effective at influencing these specific beliefs. Yet the corrective statements in the advertisements were not as effective at influencing beliefs related to smoking addictiveness. A possible reason that smoking addictiveness was not as strongly influenced by the corrective advertisements as the other beliefs is that belief in smoking addictiveness is already strong (as the mean for the no-exposure control condition in Table 1, Panel B, shows), leading to ceiling effects that limit the degree to which beliefs can become stronger from advertising and promotion (Andrews et al. 2004).

We also examine whether the addition of (enhancing) graphic visuals and a distracting visual condition (based on documents the intervenors submitted; *U.S. v. Philip Morris USA Inc.* 2006c) to the ad copy had an influence on the belief themes. For this sample and specific copy test context, there was little effect of these visuals relative to the copy-only ad condition. Although the pilot test suggests that the presence of a graphic visual is capable of increasing the strength of health effects and addictiveness beliefs for the sample of young adults ( $M_{\text{age}} = 22$  years), the results in the main study indicate that the addition of the graphic visual did not significantly influence beliefs on a consistent basis. However, although there were minimal effects on these (more cognitive) belief themes, there was some effect of the graphic visual in the main study on overall smoking attitude.

There also was little evidence that the “distracting” ad condition performed less favorably than the copy-only or graphic visual ad versions in which the copy presented was static. Although manipulation checks indicated that participants rated the distracting visual condition as more distracting than the graphic visual condition ( $p < .01$ ), the absolute values for perceived distraction were low across conditions

( $M_{\text{distracting visual}} = 3.09$ ,  $M_{\text{graphic visual}} = 2.21$ ). Perhaps the results were not as strong as we expected because the forced exposure to the advertisement reduced the effect of the distracting visual. Although the literature suggests that pictures in an advertisement are likely to distract people from processing the message (Petty and Cacioppo 1986), it is possible that consumers who are more likely to support the message (e.g., nonsmokers) versus consumers who are more likely to respond negatively to the message (e.g., smokers) react differently to advertisements that include distracting elements (O’Keefe 2002). Further research might address the effect of distraction under different exposure conditions and other elements in advertisements (headlines, theme) that may lead to distraction.

Consistent with  $H_3$ , the results show that though the target beliefs differed and were lower for smokers in general, there were more substantial differences between smokers and nonsmokers for some of the target beliefs (e.g., second-hand smoke, deceptiveness) than for others (e.g., addictiveness). In addition, the results show direct effects of the corrective ad exposure and the target beliefs on attitude toward smoking, and they suggest that ad exposure has a somewhat greater effect on reducing attitude toward smoking for smokers than for nonsmokers.

## Implications for Corrective Statements Associated with *U.S. v. Philip Morris USA Inc.*

Several potential implications of these findings are relevant to *U.S. v. Philip Morris USA Inc.* (2006a, b). The copy test findings show that, in general, consumers' beliefs about smoking can be affected in a manner consistent with the objectives of the court. Specifically, the results from our study show that exposure to a corrective advertisement had significant effects on the light/low-tar, cigarette manipulation, company deceptiveness, and health effects beliefs.

Although the corrective advertisements did not significantly affect all the belief themes, it should be noted that many of the mean levels for these belief themes in the control groups not exposed to the corrective statements were already high on these multi-item, seven-point scales. For example, the mean is particularly high for the addictiveness belief ( $M = 6.19$ ), given a scale maximum of seven. It could be argued that despite past misleading actions, statements from executives, and the marketing tactics of tobacco companies, the majority of these study participants currently do not appear to have extremely high levels of “incorrect” general beliefs about several aspects of smoking and its consequences. Therefore, although some of the general beliefs show increases from ad exposure, they may not be as strongly affected because the control group respondents already reported such high mean levels in their beliefs. However, note that current smokers' beliefs are somewhat lower than those of nonsmokers. For smokers, corrective statements in advertising appear to offer the most substantial opportunity for strengthening beliefs related to the deceptiveness of tobacco companies, the health effects of secondhand smoke, and light/low-tar cigarettes.

For the nonsmokers in our main study (as well as all participants in our pilot study), the weakest antismoking belief

theme detected in the control condition involved the health benefits of light/low-tar cigarettes. Indeed, prior literature suggests that many consumers perceive low-tar and light cigarettes as better or less harmful for them than regular cigarettes (Kozlowski et al. 1998; Kropp and Halpern-Felsher 2004). Yet, importantly, the results show that the low-tar/light cigarette belief theme can be strengthened through the use of corrective statements. Thus, although there can be limitations to the effectiveness of any corrective campaign (Wilkie, McNeill, and Mazis 1984), the most effective approach may be to weight any such campaign toward the weaker beliefs (e.g., light/low-tar cigarettes), for which the opportunity to “correct” consumer misperceptions appears to be the most substantial. However, the campaign should also continue to reinforce other important beliefs identified in *U.S. v. Philip Morris USA Inc.* (2006a, b), which clearly have implications for consumer welfare.

The results also indicate that smokers have weaker anti-smoking beliefs ( $p < .05$  or better) than nonsmokers for all beliefs. Smokers are an important target market for public health campaigns and are of considerable interest to those in charge of tobacco control policy. The findings related to differences between smokers and nonsmokers, as well as the differences between the students in our pilot study and the older adults in our main study (see Table 1, Panels A and B), suggest the importance of targeting used in different media. For example, given that the intervenors recommended that corrective statements in television advertisements should focus on singular belief themes (*U.S. v. Philip Morris USA Inc.* 2006c), specific advertisements and beliefs might be targeted at audiences for whom effects will be of the greatest potential impact.

This study also addresses how overall attitudes toward smoking are affected by the combination of the advertisements and beliefs across both smoker and nonsmoker segments. The hierarchical analysis reveals that the focal beliefs in *U.S. v. Philip Morris USA Inc.* explain variance in overall attitudes beyond what could be explained by the advertisements or smoking status alone. This finding reinforces the importance of these beliefs in affecting more general attitudes toward smoking, in support of their importance for public policy and consumer welfare. Furthermore, the effects of the corrective statement exposure and beliefs on attitudes were somewhat stronger for smokers than for nonsmokers. This overall pattern of findings suggests the importance of antismoking efforts in general to influence beliefs about smoking and smokers' attitudes.

### Limitations and Further Research

Several limitations of the research may affect the generalizability of the findings. Respondents saw only a limited number of potential corrective advertisements, which were based on information directly provided within documents the intervenors submitted to the court. Although the use of corrective statements has been upheld, the exact corrective statements and specific advertisements that will be required have not yet been decided, and the specific remedies regarding corrective advertising go back to Judge Kessler (Duff 2010). Thus, other corrective advertisements com-

bined with different visuals or graphic pictures could be used to test the same hypotheses, and repeated exposure to these corrective advertisements could be studied (Hawkins and Hoch 1991; Hawkins, Hoch, and Meyers-Levy 2001). The “Final Order” (*U.S. v. Philip Morris USA Inc.* 2006b) also specified that other media (e.g., television) should be used to focus on specific beliefs rather than on all the beliefs, as in the print advertisements. Thus, further research might examine the use of corrective statements in other types of media that focus on a single type of belief. In addition, as in most copy test research, we collected data in settings that may differ from natural ad exposures, and such differences might influence the generalizability of the findings.

For the control condition in our study, we chose a no-exposure control rather than a purged/tombstone ad condition or a different ad control (Andrews and Maronick 1995). Unlike many corrective ad studies, there was not a specific advertisement (or limited number of advertisements in a campaign) that was in question. Instead, there were many diverse actions that occurred over approximately 50 years that the court viewed as “false, deceptive, and misleading public statements about cigarettes and smoking” (*U.S. v. Philip Morris USA Inc.* 2006b, p. 1632). The court was concerned with the long-term effects of these public actions that occurred for many decades, and in such instances, the effect of the court-based corrective advertisement relative to baseline beliefs of consumers not exposed to any advertisement seems reasonable. Although such no-exposure controls are used in the evaluation of public policy research and social marketing campaigns (e.g., Foley and Pechmann 2004; Pechmann and Andrews 2010), we acknowledge that they may be subject to some trade-offs regarding the specificity of measures and comparison of test and control groups versus other ad control choices (cf. Andrews and Maronick 1995). Further research could compare the findings from our study with alternative ad control conditions.

Although the beliefs we examined were tied directly to those specified in *U.S. v. Philip Morris USA Inc.* (2006a, b), other beliefs related to smoking could be examined (e.g., relative risk, different types of cancer, years of life lost; see Jamieson and Romer 2001). Similarly, because of the central focus on particular consumers' beliefs in the court's decision, our research addressed the effects of corrective statements in advertisements on these beliefs, with a secondary analysis related to effects of the corrective advertisements and beliefs on general attitude toward smoking. Although *U.S. v. Philip Morris USA Inc.* was not directly concerned with effects beyond these belief outcomes, many public health advocates may be interested in a broader set of dependent variables. For example, could the use of corrective ad statements to change belief levels directly or indirectly lead to smoking cessation among smokers or be effective in encouraging adolescents or college-aged consumers *not* to begin smoking? In summary, many potential research opportunities could arise from the decision of the highly contested and intriguing case of *U.S. v. Philip Morris USA Inc.* (2006b).



It's time we cleared the air on smoking...



**For decades, we deliberately mislead the American Public about the health effects of smoking.**

**A Federal District Court is requiring us to make this statement:**

We told you that smoking and secondhand smoke were not dangerous and that smoking was not addictive. We falsely marketed “light” and “low-tar” cigarettes as less harmful than regular cigarettes to keep smokers from quitting - even when we knew they were not.



**Here's the truth:**

- Smoking kills 1200 Americans every day from cancer, heart attacks, and many other illnesses. It damages almost every organ in the body.
- Smoking is very addictive and therefore very hard to quit. We even manipulated cigarettes by adding things like ammonia to make them more addictive.
- There is no health benefit from smoking “light,” “low-tar,” “ultra-light,” “mild,” or “natural” cigarettes.
- Secondhand smoke is a proven cause of cancer, heart attacks, and other illnesses. It kills more than 38,000 Americans each year.

**Paid for by Altria (Philip Morris) under order of a Federal District Court**



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- **There is no health benefit from smoking “light,” “low-tar,” “ultra-light,” “mild,” or “natural” cigarettes.**
- **Secondhand smoke is a proven cause of cancer, heart attacks, and other illnesses. It kills more than 38,000 Americans each year.**



**Paid for by Altria (Philip Morris) under order of a Federal District Court**



## Appendix C: Measures and Reliabilities of Antismoking Beliefs Associated with *U.S. v. Philip Morris USA Inc.*

### Health Effects (Pilot Study $\alpha = .82$ , Main Study $\alpha = .88$ )

1. Cigarette smoking causes lung cancer.
2. It is not likely that regular cigarette smoking will lead to heart disease. (reverse coded)
3. Cigarette smoking affects respiratory health and causes diseases such as emphysema.
4. Smoking by pregnant women increases the risks for fetal injury, premature birth, and low birth weight.
5. Cigarette smoking is not related to the chance of stroke. (reverse coded)
6. In general, smokers are no more likely to develop serious diseases, like lung cancer or heart disease, than nonsmokers. (reverse coded)
7. Cigarette smoking causes many diseases, including lung cancer, several other cancers, coronary heart disease, and several other respiratory diseases and conditions.
8. In general, smokers are as healthy as nonsmokers. (reverse coded)

### Low-Tar and Light Cigarettes (Pilot Study $\alpha = .93$ , Main Study $\alpha = .91$ )

1. It is safer to smoke "low-tar," "light," "ultralight," "natural," and "mild" cigarettes than it is regular brands.
2. Compared to regular cigarette brands, there are definite health benefits from smoking "low-tar," "light," "ultralight," "mild," or "natural" cigarettes.
3. Compared to regular cigarette brands, "low-tar," "light," "ultralight," and "mild" cigarettes reduce the chance of diseases related to smoking.
4. Smoking cigarettes with lower tar and nicotine levels are safer to one's health than are regular cigarettes.
5. Smoking cigarettes with low tar and low nicotine levels provides benefits to health over smoking regular cigarettes.
6. Light cigarettes are less harmful than regular cigarettes.
7. Smokers of light cigarettes take in less tar than smokers of regular cigarettes.
8. People smoking a cigarette labeled "light" will absorb just as much or more tar, nicotine, and carbon monoxide as when smoking a regular cigarette. (reverse coded)

### Secondhand Smoke (Pilot Study $\alpha = .89$ , Main Study $\alpha = .94$ )

1. Breathing smoke from someone else's cigarette is harmful.
2. Secondhand smoke is dangerous to nonsmokers.
3. Secondhand smoke is not as dangerous as people make it out to be. (reverse coded)
4. Secondhand smoke kills people.
5. Exposure to secondhand smoke does not cause lung cancer in nonsmokers. (reverse coded)

6. Exposure to secondhand smoke can cause heart disease in nonsmokers.
7. Secondhand smoke does not cause disease and poor health in children. (reverse coded)
8. In children, secondhand smoke damages the lungs and causes sudden infant death syndrome (SIDS), respiratory and ear infections, and more severe asthma.

### Tobacco Companies' Manipulation of Cigarettes (Pilot Study $\alpha = .81$ , Main Study $\alpha = .87$ )

1. Tobacco companies manipulated the design of their cigarettes to increase consumers' addiction.
2. Tobacco companies control the amount and form of nicotine delivery in their cigarettes.
3. Tobacco companies did not intentionally influence the level of nicotine received from smoking cigarettes. (reverse coded)
4. I do not believe that tobacco companies purposely design cigarettes so that they provide an addictive dose of nicotine. (reverse coded)
5. Tobacco companies manipulate cigarettes to make them more addictive.

### Addictiveness (Pilot Study $\alpha = .78$ , Main Study $\alpha = .75$ )

1. Smoking is addictive.
2. Cigarettes and other forms of tobacco are not addicting. (reverse coded)
3. Nicotine is a drug that causes addiction to tobacco.
4. Nicotine is physically addictive.
5. The factors that lead to tobacco addiction are similar to those that lead to heroin and cocaine addiction.

### Tobacco Company Deceptiveness (Pilot Study $\alpha = .90$ , Main Study $\alpha = .96$ )

1. Tobacco companies try to get young people to start smoking.
2. Tobacco companies mislead young people into believing smoking is okay.
3. Tobacco companies use deceptive advertising and promotion to influence the perception of smoking to seem "cool" and "socially desirable."
4. Tobacco companies mislead consumers on the effects of smoking on their health and others around them.
5. Tobacco companies encourage people to start smoking.
6. Tobacco companies have used deceptive practices to get people hooked on smoking.

### Main Study Measures and Manipulation Checks

#### *Perceived Relevancy of the Visual (Main Study $\alpha = .87$ )*

1. It makes sense for these pictures to be shown with the text used in the ad.
2. I think that the pairing of these pictures with the text in the ad is appropriate.
3. I think the pictures shown in the ad are relevant to the text in the ad.

### Perceived Visual Distraction

1. I feel that the pictures distract me from the message of the ad (anchored by “strongly disagree/strongly agree”).

### Overall Attitude Toward Smoking (Main Study $\alpha = .96$ )

1. “In general, my attitude toward smoking cigarettes is ...” (anchored by “unfavorable/favorable,” “negative/positive,” and “bad/good”).

### Smoking Status

1. How many cigarettes have you smoked in your entire life?
2. During the past 30 days, on how many occasions did you smoke cigarettes?

(We classified participants as smokers if they had smoked more than 100 cigarettes in their life and had smoked a cigarette within the past 30 days.)

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