Effectiveness of Cigarette Advertisements on Women: An Experimental Study

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We investigated three factors that could influence subjects' reactions to print advertisements for cigarettes. A total of 115 college women were shown cigarette ads that varied on two dimensions: whether an attractive model was shown and whether a general or specific warning label was shown. One half of the women were pretested on their beliefs about the hazards of smoking prior to seeing the ads; all of the women completed a posttest beliefs measure. Ratings of the attractiveness, persuasiveness, and credibility of the ads were collected, and the smoking status of subjects was assessed. Results indicated that specific warnings on ads can act as a counterinfluence to an ads' appeal by making it appear less attractive and less persuasive than if the ad contained only a general warning. This effect was especially true for smokers. Subjects also rated an ad as more attractive, more persuasive, and less credible when it showed an attractive model than when it did not. Being pretested on their beliefs about the hazards of smoking resulted in high attractiveness and persuasion ratings and in smokers' recalling and recognizing more of the specific warnings that appeared on ads. Practical and theoretical implications for the results are discussed.

Despite the 1971 cigarette-advertising ban on television and radio and despite the inclusion of health warning labels on cigarette print ads and packages, approximately 31% of the American population reported smoking cigarettes (Shopland & Brown, 1987), and 350,000 Americans die each year from smoking-related diseases (see Warner, 1986). In recent years, efforts of government, medical, and other public sources to warn individuals of the hazards of smoking have intensified. A variety of new restrictions have been placed on smoking, resulting, in part, from the concern of nonsmokers for their right to a smoke-free environment. More than 30 states have passed clean indoor-air laws (Bell & Levy, 1984), which has led to the establishment of smoking and nonsmoking sections in workplaces, hospitals, restaurants, and other public facilities. Federal regulations have restricted smoking on airplanes, increased cigarette excise taxes, and sought to strengthen cigarette warning labels by pointing out some of the specific health consequences of smoking (Warner, 1986).

The degree to which specific warnings affect beliefs about the negative health consequences of smoking and decrease the persuasiveness of advertisements was examined in the present study. Until recently, cigarette warnings contained the general proposition that "cigarette smoking is dangerous to your health." In 1985, Congress enacted a law requiring that cigarette ads contain four rotating warnings about the specific negative consequences of smoking. A steady accumulation of social-psychological research evidence has suggested that descriptive or very specific information may have a stronger impact on thought processes than general or abstract information (Abelson, 1976; Fishbein, 1979; Leventhal, 1970; Nisbett, Borgida, Crandal, & Reed, 1976; Nisbett & Ross, 1980; Rogers, Kuiper, & Kirker, 1977).

In addition to examining the specificity of warning labels, we investigated three other factors that could influence the effectiveness of cigarette ads and warning messages. One important counterinfluence to cigarette warning labels is the ability of advertisers to design persuasive and appealing cigarette ads. Cigarette ads very skillfully present an image of smokers as attractive, healthy individuals, which seems to run counter to messages that smoking is dangerous to one's health (cf. Altman, Slater, Albright, & Maccoby, 1987; Davis, 1987). The influence of models in ads was examined in the present research.

Two other factors considered in this research were smoking status and the effects of pretesting beliefs about the hazards of smoking. Assuming that cigarette ads are designed to both retain their current market of smokers and encourage new people to smoke (cf. Warner, 1986), it is important to study how ad imagery and warning labels affect smokers' and nonsmokers' perceptions of ads and smoking. Sensitizing smokers and nonsmokers to the hazards of smoking by pretesting smoking beliefs also may affect their perceptions of cigarette ads and their memory for product warning information. The *selective exposure* hypothesis (Festinger, 1957), for example, argued that people actively avoid information that is inconsistent with their own beliefs, and subsequently, they are less likely to recall this information. However, some reviews of this literature (e.g., Freedman & Sears, 1965) have concluded that support for these effects does not exist (see also Burnkrant, 1976).

To sum, in this research we studied how specific warnings

Table 1
Stimulus Materials: Experimental and Control Warnings

Experimental Warnings

1. "Warning: The Surgeon General has determined that your smoking cigarettes significantly increases your chances of having coronary heart disease."
2. "Warning to women: The Surgeon General has determined that your smoking cigarettes while pregnant significantly increases your chances of having a premature birth."
3. "Warning to smokers: The Surgeon General has determined that there is no safe level of smoking cigarettes. Smoking even two cigarettes a day is harmful to your health."
4. "Important information: The Surgeon General has determined that students who smoke have significantly lower scholastic achievement than students who do not smoke."
5. "Warning: The Surgeon General has determined that your smoking cigarettes significantly increases your chances of having circulatory problems."
6. "Warning to women: The Surgeon General has determined that your smoking cigarettes while pregnant significantly increases your chances of having a stillborn child."
7. "Warning to smokers: The Surgeon General has determined that smoking more than a single cigarette significantly increases your chances of becoming a regular smoker."
8. "Important information: The Surgeon General has determined that smokers are in the minority. Only 30% of adults are cigarette smokers."

Control warning

1. "Warning: The Surgeon General has determined that cigarette smoking is dangerous to your health."

about the negative consequences of smoking, an ad's imagery appeal, an individual's smoking status, and beliefs about smoking jointly influenced perceptions of cigarette ads and memory for product health information in a sample of college-aged women.

Method

Subjects

Prior to the introduction of the new cigarette warning labels by the federal government in 1985, 115 women (27 smokers and 88 nonsmokers) participated in the experiment as part of their course credit in introductory psychology.

Procedure

Subjects were randomly assigned to one of four treatment conditions. Prior to viewing cigarette ads, one half of the subjects were pretested on their beliefs about the hazards of smoking, whereas the other half of the subjects were pretested on their beliefs on an unrelated topic, record buying. Subjects rated on a 7-point scale (+3 = *likely*, −3 = *unlikely*) 10 belief statements that were composed from the statements used in the experimental warnings (e.g., "My smoking cigarettes will significantly increase my chances of getting coronary heart disease"). Subjects viewed ads displaying either 8 different warning labels about the specific negative consequences of smoking (experimental subjects) or the general, Surgeon General's warning label "cigarette smoking is dangerous to your health" (control subjects). Table 1 lists the warnings. All subjects viewed slides of 8 different ads; one half of the ads showed a picture of a healthy, attractive woman smoker (model ads), the other half showed a picture of a cigarette or a pack of cigarettes, but no person or scenic background (nonmodel ad). The order of model and nonmodel ads was randomized. In addition, specific warnings shown on the model and nonmodel ads were varied to ensure that warning exposure was not confounded with type of ad. All of the experimental subjects received the experimental warnings in the same order.

Subjects viewed each ad for 1½ min. The experimenter made no mention to subjects of the changes in warning labels. While viewing the slides, subjects were asked to evaluate each ad on eight 7-point semantic

differential scales (values of +3 to −3). Factor analyses of these scales indicated the following three ad-rating dimensions (cf. Baker & Churchill, 1977): (a) attractiveness (scales were good–bad, clever–stupid, well-designed–not-well-designed, and attractive–unattractive), (b) persuasiveness (persuasive–unpersuasive and makes-me-does-not-make-me want to buy the product), and (c) credibility (informative–uninformative and honest–dishonest).

Following exposure to all eight ads, subjects were asked to recall in writing any warning they remembered appearing on the ads. Warnings were scored dichotomously for correct and incorrect content of the warning. Then subjects' recognition of the warnings was measured by asking them to rate on a 7-point scale the likelihood that each warning appeared on the ads. Values above the midpoint were scored as correct recognition, and values at midpoint and below were scored as incorrect recognition for experimental conditions. No time limit was set on the recall and recognition measures. Finally, all of the subjects filled out the same smoking beliefs measures completed by one half of the subjects during the pretest.

Results

Factors Affecting Ad Ratings

A 2 × 2 × 2 × 2 (Type of Ad × Type of Warning × Pretest × Smoking Status) repeated measures analysis of variance (ANOVA) with weighted means was conducted on each of the three ad dimensions. The repeated measure was type of ad, which was computed by summing the rating scales associated with the four model or four nonmodel ads.

Results of the attractiveness dimension showed significant main effects for type of ad, $F(1, 107) = 72.26, p < .01, \omega^2 = .38$; type of warning, $F(1, 107) = 5.20, p < .05, \omega^2 = .04$; and pretest, $F(1, 107) = 3.88, p = .05, \omega^2 = .02$; and a significant Type of Warning × Smoking Status interaction, $F(1, 107) = 4.25, p < .05, \omega^2 = .03$. As shown in Table 2, subjects perceived ads as more attractive if the ad had a model, if it had a general health warning, or if subjects did not receive the smoking-beliefs pretest. Smokers who saw ads with the specific warnings found the

Table 2
Means by Condition and Ad Rating Dimensions

Condition	n	Attractiveness	Persuasiveness	Credibility
			Dimension	
Type of ad				
Model	115	15.40**	−2.82**	−1.98**
Nonmodel	115	3.08	−7.13	3.21
Type of warning				
General	58	11.37*	−3.05**	1.50
Specific	57	7.08	−6.94	−0.29
Pretest				
No pretest	60	11.03*	−2.94*	1.38
Pretest	55	7.29	−7.19	−0.22
Smoking status				
Smoker	27	8.04	−1.76*	−0.06
Nonsmoker	88	9.61	−5.96	0.78

Note. Ranges of scores for each dimension across the sum of four ads are as follows: attractiveness (−48 to +48), persuasiveness (−24 to +24), and credibility (−24 to +24). Higher scores indicate that an ad was viewed as more attractive, persuasive, or credible.
* $p < .05$. ** $p < .01$.

ads to be less attractive than did smokers exposed to general warnings or nonsmokers in either warning condition, as shown in Table 3.

The means on the persuasiveness dimension were uniformly negative (see Table 2). Significant main effects were found for type of ad, $F(1, 107) = 38.85, p < .01, \omega^2 = .25$; type of warning, $F(1, 107) = 8.11, p < .01, \omega^2 = .06$; smoking status, $F(1, 107) = 5.90, p < .05, \omega^2 = .04$; and pretest, $F(1, 107) = 9.52, p < .01, \omega^2 = .07$. Subjects rated ads as more persuasive if the ad had a model, if it had a general warning, or if subjects did not receive the smoking-beliefs pretest. It is not surprising that smokers were more likely than nonsmokers to report that they would buy the cigarettes advertised. The low ratings that smokers gave ads on the buying dimension was probably due to brand loyalty and the fact that the ad presentation was not powerful enough (nor designed) to influence smokers to switch brands.

Finally, results of the credibility dimension yielded a significant main effect for type of ad, $F(1, 107) = 89.40, p < .01, \omega^2 = .44$, and significant interactions for Smoking Status × Type of Warning, $F(1, 107) = 6.15, p < .05, \omega^2 = .04$, and Smoking Status × Pretest, $F(1, 107) = 6.31, p < .05, \omega^2 = .04$. Subjects rated the ads higher on credibility if the ad did not have a model. The interactions indicated that smokers, more than nonsmokers, found ads less credible if ads contained specific warnings (see Table 3) and if the smokers had not been pretested on their smoking beliefs. Results of interaction effects are tentative, however, because the sample size of smokers in the individual cells was small.

In summary, the results of the ad ratings indicated that each of the four manipulated factors affected subjects' perceptions of the attractiveness, persuasiveness, and credibility of the ads. Ads having a model were rated as more attractive and persuasive but less credible than nonmodel ads. Ads with the more specific warnings were rated as less attractive and persuasive than ads with general warnings. Particularly for smokers, the specific warning ads were rated lower on attractiveness and credibility.

Subjects who were not pretested on their smoking beliefs rated the ads as more attractive and persuasive than did subjects who were pretested. Smokers who were not pretested rated the ads as more credible than did pretested smokers or nonsmokers in either pretest condition. Finally, it is important to note that the effect sizes (ω^2) were substantially greater for the model–nonmodel factor than for any of the other factors, signifying the relative contribution of this variable to variance in the three ad rating dimensions.

Recall and Recognition of Warnings

A 2 × 2 × 2 (Type of Ad × Smoking Status × Pretest) repeated measures ANOVA was conducted on the number of correctly recalled and recognized specific warnings of each ad type (possible scores ranged from 0 to 4). General warning conditions were excluded from these analyses because the warning was not varied.

Type of ad did not affect recall or recognition, $Fs < 1$. That is, warnings on model ads were not significantly better recalled or recognized than were warnings on nonmodel ads (see Table 4). Several other effects occurred, however. First, analyses indicated main effects for pretest on both recall, $F(1, 53) = 8.69, p < .01, \omega^2 = .12$, and recognition, $F(1, 53) = 6.88, p < .05, \omega^2 = .09$. For example, subjects in pretest conditions recognized more warnings than did subjects in posttest-only conditions. These results are not surprising given that the pretest coupled with ad warnings gave subjects double exposure to the antismoking information. Contrary to the selective exposure hypothesis, smoking status did not have an overall effect on memory; for example, smokers were not less likely to recognize antismoking information than were nonsmokers (see Table 4). There was, however, a Smoking Status × Pretest interaction for recognition, $F(1, 53) = 4.68, p < .05, \omega^2 = .06$. The pretest affected recognition of warnings to a greater extent for smokers (pretest, $M = 3.67$; no pretest, $M = 1.80$) than for nonsmokers (pretest, $M = 2.60$; no pretest, $M = 2.43$).

Table 3
Means of Ad Rating Dimensions for Significant Interactions

Condition	Smoker M	Smoker n	Nonsmoker M	Nonsmoker n
Attractiveness				
Type of warning				
General	12.29	14	11.07	44
Specific	3.46	13	8.15	44
Credibility				
Type of warning				
General	1.96	14	1.35	44
Specific	−2.00	13	0.22	44
Pretest				
No pretest	2.43	15	1.02	43
Pretest	−2.92	12	0.54	45

Note. Ranges of scores for each dimension across the sum of four ads are as follows: attractiveness (−48 to +48) and credibility (−24 to +24). Higher scores indicate that an ad was viewed as more attractive or credible. Each two-way interaction was significant at $p < .05$.

Table 4

Means of Recall and Recognition of Specific Warnings by Condition

Condition	n	Recall	Recognition
Type of ad			
Model	115	1.53	2.44
Nonmodel	115	1.60	2.47
Pretest			
No pretest	60	1.17**	2.11*
Pretest	55	2.00	3.13
Smoking status			
Smoker	27	1.46	2.73
Nonsmoker	88	2.68	2.51

Note. Scales ranged from *no recall or recognition* (0) to *maximum recall or recognition* (4).
* $p < .05$. ** $p < .01$.

Pretest beliefs were also used to investigate the relation between a subject's initial beliefs about the negative consequences of smoking and her subsequent memory for antismoking information. A correlation was computed between the total belief strength (a sum of the 10 pretest belief scores, a possible range of −30 to +30) in pretest–posttest conditions and the total number of correctly recalled warnings (a possible range of 0 to 8). This correlation, $r = .02$, was nonsignificant, $p > .05$. The correlation between total belief strength and warning recognition, $r = .05$, was also nonsignificant, $p > .05$. Furthermore, correlations found between memory and prior belief strengths for smokers and nonsmokers individually were nonsignificant.

Belief Change

Additional analyses of posttest belief and belief change yielded few significant differences. A 2 × 2 × 2 × 2 (Smoking Status × Pretest × Type of Warning × Type of Ad) repeated measures ANOVA was conducted on posttest measures of belief. Results showed only one significant effect, a main effect for smoking status, $F(1, 107) = 8.58$, $p < .05$, $\omega^2 = .06$. Not surprisingly, smokers were less likely to believe that their cigarette smoking was harmful ($M = 1.99$) than were nonsmokers ($M = 4.89$).

A 2 × 2 × 2 (Smoking Status × Type of Warning × Type of Ad) repeated measures ANOVA was conducted on the *amount* of belief change from pretest to posttest. This analysis included only pretest conditions. A greater amount of change referred to a greater acceptance of antismoking information. Results of this analysis showed a significant main effect for smoking status, $F(1, 51) = 5.90$, $p < .05$, $\omega^2 = .08$, and no other main effects or interactions. On average, smokers showed less change in beliefs from pretest to posttest ($M = .47$) than did nonsmokers ($M = 2.44$).

Thus, analyses of beliefs about the negative consequences of smoking indicated that smokers not only showed less acceptance of the antismoking information than did nonsmokers, but they were also more resistant to changing their beliefs. However, there were no significant effects of type of warning (specific or general) or type of ad (model or nonmodel) on beliefs.

Discussion

In 1984, the U.S. Congress passed a law requiring that cigarette advertisements replace the general, Surgeon General's warning with more specific warnings about the hazards of smoking. The main purpose of the present research was to test whether including specific warnings on cigarette ads would have a substantial counterinfluence on college women's evaluations of the attractiveness, persuasiveness, and credibility of cigarette ads. The cigarette advertising industry has a number of powerful tools through which to persuade smokers and nonsmokers to buy their product. The use of attractive, healthy models is one tool that was examined in this research. The present laboratory results indicated that the image appeal of models and the specificity of warnings each had an impact on ad evaluations, although the effects of the image appeal were substantially greater than the countering influences of specific warnings. Results indicated that ad models may serve to increase the attractiveness and persuasiveness of cigarette ads and decrease their credibility. In contrast, specific product warning information tended to decrease the attractiveness and persuasiveness of ads. These effects appear to be additive, such that the effect of one factor does not increase or decrease the effects of the second factor. Thus, for our sample of smokers and nonsmokers, the most attractive and persuasive ads were those that contained models and the general warning. The least attractive and persuasive ads were those that contained no model and those that had the more specific health warnings.

Thus, this research suggests that specific warnings may in fact serve an important counterinfluence to the cigarette advertising message. However, another public policy implication of these findings is to consider more carefully the use of models in cigarette advertisements. Current advertising codes are supposed to restrict the kinds of images portrayed in cigarette ads. Ads are not to associate cigarette smoking with vigorous physical activity or sexual desirability, for example (Warner, 1986). Ads examined in the present study mirrored images frequently portrayed in cigarette advertisements and featured attractive and healthy models. Such models made subjects rate ads more positively; ads without models were rated less positively.

This research also examined the influence of pretesting smoking beliefs and smoking status on ad evaluations. Pretested subjects viewed ads as less attractive and, particularly for smokers, less persuasive and credible than did subjects receiving no pretest. Although smoking status interacted with type of warning and pretesting on the ad ratings, the small sample sizes preclude firm conclusions about the effects of smoking status. The current study had small numbers of smokers because no special effort to recruit smokers was made. Rather, a random sample of college women were recruited, both smokers and nonsmokers, who are important targets of cigarette advertisements.

Only pretesting had a significant effect on recall or recognition of specific warnings. The pretest apparently sensitized subjects to the warnings and, subsequently, increased recall and recognition of warning information. Furthermore, the effect of pretesting was particularly strong for smokers. Pretesting may have had more of an impact on the study sample than on a present-day sample because the study was conducted before the specific, Surgeon General's warnings were in effect.

The subjects of this study, college women, were important to study for several reasons. At least one of the specific warnings now contained on cigarette packages and ads is relevant to women (increased risk for pregnancy), and two of the warnings that we tested were specific to women. Also, the rates of smoking among young women has not declined as rapidly as the rates for men (Warner, 1986), and recent evidence indicates that lung cancer has now surpassed breast cancer as the number-one cancer among women (Shopland & Brown, 1987).

Results from these subjects, however, may not be generalizable to other samples (e.g., college-aged men). Furthermore, the small sample sizes, particularly for smokers, may contribute to null effects for certain variables. Larger samples would better indicate the interactive effects of the study variables and show stronger theory tests (e.g., of the selective exposure hypothesis). Last, the artificiality of the laboratory situation reduced the external validity of results, although the methodology selected is defensible given the greater control over the experimental variables. Study effects, including null effects, should be considered with these limitations in mind.

Concluding Remarks

Two effects are clear from this research. Models on ads had a powerful influence on college women's evaluations of the attractiveness and persuasiveness of cigarette ads. The specificity of warning labels also had a significant influence in decreasing the attractiveness and persuasiveness of ads. Given that the cigarette industry continues to target women and youth in their advertising (Altman et al., 1987; Davis, 1987) and the likelihood that specific warnings will lose their impact as their novelty wears off, new policy initiatives may be needed to counter the influence of cigarette advertising.

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