

Antismoking Advertisements for Youths: An Independent Evaluation of Health, Counter-Industry, and Industry Approaches

Cornelia Pechmann, PhD, MS, MBA, and Ellen T. Reibling, PhD, MA

Twenty-four the US states have initiated tobacco use prevention advertising campaigns.¹ Different message themes and styles of execution are used,^{2,3} and there is controversy over which approaches work best.^{1,4–8} Past studies have asked adolescents their opinions of antismoking ads, and adolescents have generally preferred health-themed ads evoking strong negative emotions.^{9–15} We conducted a randomized controlled trial or “copy test” to examine how exposure to different ad types affects adolescents’ intention to smoke relative to a control (no antismoking ad exposure) condition.

In a copy test, subjects are shown an ad and then asked to answer questions about their product-related feelings, beliefs, and intentions. These responses are statistically compared either with the same subjects’ baseline (preexposure) responses or with the responses of similar people who were randomly assigned to a no-exposure control condition. We used the latter approach. We tested 8 ad types representing common health, counter-tobacco industry, and tobacco industry approaches. We paid particular attention to health ads, which are often referred to as “fear appeals” and are especially controversial.^{16,17}

LITERATURE REVIEW AND HYPOTHESES

Fear appeals have at least 2 potential limitations. First, evoking fear among adolescents who feel unable to cope may lead to maladaptive responses such as denial of the problem.^{18,19} Further, highlighting risks among adolescents who feel invincible may serve to increase the attractiveness of smoking as “forbidden fruit.”^{17,20,21} Health appeals need not evoke fear, though; they may evoke disgust.^{22,23} Research indicates that associating smoking with disgust is perhaps the single most effective way to make smoking socially

Objectives. We used a validated copy test method to examine the effectiveness of 8 types of antismoking advertisements representing health, counterindustry, and industry approaches. We tested the hypothesis that health ads about tobacco victims can lower most adolescents’ intent to smoke if the ads elicit disgust and anti-industry feelings rather than fear. We hypothesized null effects for adolescents with conduct disorder because of their abnormally low empathy.

Methods. Ninth-grade students from 8 California public schools (n = 1725) were randomly assigned to view 1 of 9 videotapes containing a TV show with ads that included either a set of antismoking ads or a set of control ads. Participants completed baseline measures assessing personality traits and postexposure measures assessing smoking intent, feelings, beliefs, and ad evaluations.

Results. Ads focusing on young victims suffering from serious tobacco-related diseases elicited disgust, enhanced anti-industry motivation, and reduced intent to smoke among all but conduct-disordered adolescents. Counterindustry and industry ads did not significantly lower smoking intention.

Conclusions. Sponsors of tobacco use prevention ad campaigns should consider using ads showing tobacco-related disease and suffering, not just counterindustry ads. Ads should be copy tested before airing. (*Am J Public Health*. 2006;96:XXX–XXX. doi:10.2105/AJPH.200.057237)

unacceptable and encourage antismoking activism.^{24,25} Disgust is what people feel in response to an immoral act,^{26,27} and it motivates action.²⁸ Whereas fear is associated with a desire to escape or hide, disgust is associated with a desire to expel or obliterate.^{29,30} Research also suggests how disgust-provoking ads can be created: by showing innocent victims suffering, empathy and moral indignation are elicited.^{22,23,31,32} Hence, our first hypothesis was this: among adolescents, antismoking ads that focus on victims suffering from smoking’s serious health effects will elicit more disgust than other ad types and will increase anti-industry motivation and lower intention to smoke relative to the control (no antismoking ad exposure) condition.

Three types of ads fit this description: ads focusing on disease and suffering, ads focusing on a dying parent, and ads focusing on environmental tobacco smoke (Table 1). Counterindustry ads focus on the victimizers, not on the victims; they directly attack and ridicule industry executives. We could find no research regarding whether ads that directly attack tobacco executives evoke empathy for victims or

disgust for tobacco executives. However, researchers have compared ads that explicitly state conclusions versus ads that do not.³³ The findings indicate that, if people are interested in and knowledgeable about an issue, it is preferable to give them the facts and let them draw their own conclusions. The implication is that indirect attacks on the tobacco industry, focusing on tobacco victims, might be preferable to direct attacks if youths are knowledgeable about and interested in the issue.

Research also indicates that adolescents’ reactions to ads may be moderated by their personality traits. Past studies have focused on sensation seeking or the need for varied, novel, and complex experiences.³⁴ This trait both predicts drug use^{35–37} and moderates response to antidrug ads.^{38–41} Conduct disorder, “a repetitive and persistent pattern of behavior in which the basic rights of others and major age-appropriate social norms or rules are violated,”^{42(p1469)} is even more strongly associated with adolescent smoking.^{43,44} Conduct-disordered youths are up to 4 times as likely to smoke as youths without conduct disorder.^{45,46} Further, conduct-disordered

TABLE 1—Antismoking Ad Types

Ad Type	Message Theme	Speaker	Tone	Message Subtheme	Exemplary Ad (Title, Advertiser, Year)
Disease and suffering	Health	Adult	Negative	Younger smokers suffer from horrors of living with tobacco-related diseases	Young mother is gravely ill with emphysema; says her life is full of pills ("Pills," Massachusetts, 1998)
Dying parent	Health	Youth	Negative	Smokers die prematurely, leaving behind grieving children and family	Boy talks tearfully about learning his father was dying from smoking ("Backyard," California, 1999)
Environmental tobacco smoke	Health	Adult	Negative	Environmental tobacco smoke endangers the health of family members and others	Children are shown while statistics scroll across the screen on the smoke children inhale from parents' cigarettes ("Baby Smokers," California, 1997)
Selling disease and death	Counterindustry and health	Adult	Negative	Tobacco industry uses manipulation and deception to sell a lethal product	Tobacco executives thank dying smoker, eye daughter as substitute ("Thanking Customer," Florida, 2000)
Counterindustry activism	Counterindustry	Youth	Negative and positive	Youths resent manipulative tobacco marketing tactics, engage in protests	Teens confront, humiliate liquor store owner about his tobacco ads ("Bodega," American Legacy, 2000)
Marketing tactics	Counterindustry	Youth	Negative	Tobacco industry targets youths and others with manipulative ads, promotions	A youth reveals that a tobacco sales representative admitted to targeting kids ("Aaron," Minnesota, 2000)
Acceptance of nonsmokers	Social	Youth	Positive	Many youths who do not smoke are attractive, popular, and admired	Cool teenagers at beach are nonsmokers; they don't need cigarettes ("Beach," Philip Morris, 2000)
Cosmetic effects	Social	Youth	Negative	Smokers have smelly breath and clothes, yellow teeth and nails	Pretty female turns unattractive and teeth turn yellow upon lighting up ("Pretty Disgusting," New Jersey, 1998)

youths may be less responsive than others to ads that focus on victims, inasmuch as people with conduct disorder have abnormally low empathy.^{47–49} Thus, our second hypothesis was that these antismoking ads would be expected to have null effects on conduct-disordered adolescents. However, we considered adolescents without conduct disorder, who constituted 81% of our sample, to be a meaningful target for antismoking interventions; for instance, 39% of them had tried smoking.

METHODS

We obtained 150 English-language anti-smoking TV ads that had aired from 1997 to 2001 in campaigns focused on youths or on a general audience. Most were from Massachusetts (24%), the American Legacy Foundation (23%), Florida (16%), California (10%), or Philip Morris (7%). We identified 3 common message themes (social, health, and counterindustry) and 8 ad types, or unique combinations of theme(s), subtheme, and execution (speaker and tone; Table 1). The social message theme was the least common, and it was primarily used by the tobacco industry; for example, Philip Morris used ads showing social acceptance of nonsmokers^{11,50} and

Lorillard used ads focusing on the unattractive cosmetic effects of smoking.¹

We conducted an ad screening study to select 3 similar ads of each type for the copy test. We created 14 videotapes, each containing 10 or 11 ads. Each videotape was viewed by about 35 ninth-grade students (aged 14–15 years, total n=466) from 2 schools in the area where the copy test would be conducted. After seeing an ad twice, the students were asked to appraise it. They were instructed to put a check mark next to each theme (social, health, counterindustry) and subtheme that the ad contained. They were also asked to judge the speaker's age (youth or adult), and the ad's emotional tone (they were asked, "Did the antismoking advertising make you feel angry? Sad? Disgusted? Fearful? Amused? Happy? Upbeat? Like laughing?"). For each ad type, we identified 3 ads that were judged by the majority of students to have the characteristic (intended) theme(s) and subtheme and no others and that did not differ significantly from each other in terms of emotional tone or speaker's age. None of the ads chosen for the copy test were fear inducing, according to the vast majority of students who viewed them in the ad screening study. Sponsor identifications were removed.

Participants in the copy test were 1725 male and female ninth-grade students (aged 14–15 years; 42% White, 46% Hispanic, 12% Asian) at 8 public high schools in middle- to lower-middle-class neighborhoods in southern California. Participation was voluntary but exceeded 90%. About 191 individuals viewed each videotape. All videotapes were shown at every school.

The copy test was conducted in spring 2002. During each class period, about 40 students were released from classes and randomly assigned to 1 of 2 empty rooms. The participants completed a baseline questionnaire asking about personality traits, smoking behavior, and demographics. (Intent was not assessed at baseline because a pilot test showed that asking about intent at baseline contaminated the posttest intent measure.) They were then shown a 10-minute videotape of the TV show *The Price is Right*. Embedded in the commercial breaks were either 3 anti-smoking ads of a particular type or 3 control ads that were non-tobacco-related public service announcements. Each ad appeared twice, in 2 separate commercial breaks, providing 6 total exposures so cumulative ad effects could be assessed.^{51,52} The participants also saw several non-tobacco-related commercials that

had aired on *The Price is Right*.⁵³ After watching the videotape, participants completed the outcome and ad measures.

The design was a 2-factor experiment. The first factor was ad type with 9 levels, which we manipulated by randomly assigning participants to view 1 of 9 randomly selected videotapes. The second factor was conduct disorder (present vs absent). Comparisons were made between groups, that is, participants who saw antismoking ads were compared with those who saw control ads. Because participants were randomly assigned to groups and there were no demographic differences between groups, covariates did not affect the results and were dropped.⁵⁴

At baseline, in addition to measuring smoking behavior, we measured the personality traits that research indicates are most highly associated with youth smoking.^{43,45,46,55} We used *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*⁵⁶ scales for aggression,^{37,57} attention deficit–hyperactivity disorder,^{58,59} and conduct disorder.^{57,60,61} the Children’s Manifest Anxiety Scale, Revised^{55,62–65}; the Center for Epidemiological Studies Depression Scale^{57,63,64,66–68}; Rosenberg’s Self-Esteem Scale^{55,69}; and the Brief Sensation Seeking Scale.^{35,38} Standard diagnostic criteria were used.

The outcome measures consisted of intent to smoke and smoking-related beliefs. After participants viewed the videotape, we asked them to indicate their smoking intent^{20,70,71} by agreeing or disagreeing with the following statements: “In the future, I might smoke one puff or more of a cigarette,” “I might try out cigarette smoking for a while” and “If one of my best friends were to offer me a cigarette, I would smoke it.” (A scale of 1 [strongly disagree] to 5 [strongly agree] was used throughout unless otherwise indicated). We calculated the mean intent-to-smoke score, which was 1.66. We then classified each participant whose responses were above the mean as having a smoking intent and computed the percentage of participants who had a smoking intent; however, the mean score was more precise because it used the full response range.

We also measured beliefs that previous research suggested might be affected by antismoking ads and might correspondingly affect smoking intent.^{20,72} A key measure was anti-

industry motivation: “I think we can stop cigarette companies from trying to get people to smoke,” “If we all try to stop cigarette companies, we can make a difference,” and “If I try to stop cigarette advertising, fewer people would smoke.”

The antismoking ad measures consisted of ad recall, recall of the number of ad spots seen, message theme and subtheme, ad tone, speaker age, and judged ad efficacy and ad sensation value. Participants were asked, “In the commercial breaks of the TV show you just saw, did you see any antismoking ad(s)?” and “How many antismoking ads did you see?” If participants reported seeing antismoking ads, they were asked, “In your opinion, was this advertising effective at stopping young people from smoking?” (0=not effective, 1=moderately effective, 2=highly effective)^{10,20} Regarding sensation value, they were asked, “Was the advertising emotional? Unusual or unique? Exciting? Dramatic in that it tells a strong story? Powerful, forceful, or impactful? Intense or extreme?” (Reliability, or consistency of participants’ answers to 2 or more similar questions, was measured with the statistic α ; for sensation value, $\alpha = .82$).^{38–40} Regarding emotional tone (negative or positive), they were asked, “Did the antismoking advertising make you feel angry? Sad? Disgusted? Amused? Happy? Upbeat? Like laughing?”⁷³ (for negative tone [first 3 items], $\alpha = .76$; for positive tone, $\alpha = .79$). They were also queried about theme, subtheme, and speaker age.

Finally, all participants were asked what they thought the study was about (responses were coded by 2 judges with 90% agreement). Nine percent guessed the study might be about antismoking ads, but removing these participants’ responses from the analyses did not affect the results, so they were retained.

For the statistical analyses, we used SPSS (SPSS Inc, Chicago, Ill), setting type I error to 5%. To analyze outcome measures, we used 2-factor (ad type, conduct disorder) analyses of variance (ANOVAs). Then we conducted 1-factor (ad type) ANOVAs within each conduct-disorder subgroup. Next we conducted pairwise comparisons of each ad type versus the control, using the Dunn-Sidak critical t value (8 comparisons, 2-tailed).⁷⁴ For antismoking ad measures (e.g., judged ad effi-

cacy), we compared each antismoking ad type with all others, using the Tukey-Kramer critical t value,⁷⁴ and ranked ad types from highest (1) to lowest. If 2 ad types showed an identical pattern of similarity/dissimilarity to all others, they received the same rank. (This approach is similar to using unique superscripts to designate dissimilar means.) To examine whether an ad type had a relatively negative or positive tone, we used repeated measures. To compare proportions, we used χ^2 . To compute odds ratios for intent, we used binary logistic regression with ad category as a categorical covariate (simple contrasts vs control). We used multivariate linear regression to relate beliefs and personality traits to smoking intent, and univariate linear regression to compare participants’ ad efficacy judgments with the ads’ actual effectiveness at changing smoking intent (change in intent = control mean – ad type mean).

RESULTS

About 93% of the participants exposed to antismoking advertising recalled seeing such ads. They recalled seeing, on average, 3.4 spots, slightly more than the 3 they actually saw, probably because of ad repetition. (Conduct-disordered participants and current smokers were less likely to report having seen the antismoking ads. When we dropped participants who failed to report seeing the antismoking ads, the ad effects discussed below became stronger. We have reported the findings for the full sample because they are more generalizable.) Table 2 shows the percentages of participants who recalled seeing each message theme. The vast majority of participants said they saw the message theme(s) each ad type was intended to convey; significantly fewer thought another message was conveyed.

The beliefs we measured were associated with smoking intent, but not always in the expected negative direction (Table 3). Beliefs about the severity of the health risks of smoking and vulnerability to social and marketing pressures were positively associated with intent. Most of the personality traits we measured were associated with smoking intent, but conduct disorder was more strongly associated with intent than were the other

TABLE 2—Percentages of Participants Who Recalled Seeing the Antismoking Ads and Message Themes, Mean Number of Ads Recalled, and Mean Ratings of Ad Tone

Ad Type	Saw Ads, % (SE)	No. of Ad Spots Seen, Mean (SE)	Saw Health Message, % (SE)	Saw		Negative Ad Tone, Mean Rating (SE)	Direction of Difference Between Negative and Positive Tone Means, <i>P</i> < .05	Positive Ad Tone, Mean Rating (SE)
				Counterindustry Message, % (SE)	Saw Social Message, % (SE)			
Disease and suffering	0.95 (0.02)	3.25 (0.06)	0.88 ₁ (0.03)	0.43 ₂ (0.04)	0.38 ₇ (0.04)	2.84 ₂ (0.08)	>	1.78 ₁ (0.07)
Dying parent	0.93 (0.02)	3.43 (0.06)	0.92 ₁ (0.02)	0.35 ₂ (0.03)	0.63 ₃ (0.04)	3.11 ₁ (0.08)	>	1.50 ₆ (0.07)
Environmental tobacco smoke	0.90 (0.02)	3.40 (0.06)	0.82 ₁ (0.03)	0.40 ₂ (0.04)	0.56 ₄ (0.04)	2.75 ₃ (0.08)	>	1.62 ₅ (0.07)
Selling disease and death	0.96 (0.01)	3.04 (0.06)	0.80 ₁ (0.03)	0.85 ₁ (0.03)	0.42 ₆ (0.04)	2.73 ₃ (0.08)	>	1.93 ₃ (0.07)
Counterindustry activism	0.86 (0.03)	3.45 (0.06)	0.55 ₂ (0.04)	0.82 ₁ (0.03)	0.57 ₄ (0.04)	2.47 ₄ (0.08)	=	2.43 ₁ (0.07)
Marketing tactics	0.94 (0.02)	3.33 (0.06)	0.54 ₂ (0.04)	0.86 ₁ (0.03)	0.51 ₅ (0.04)	2.34 ₅ (0.08)	>	1.88 ₁ (0.07)
Acceptance of nonsmokers	0.96 (0.01)	3.54 (0.06)	0.52 ₂ (0.04)	0.43 ₂ (0.04)	0.74 ₂ (0.03)	1.89 ₆ (0.08)	<	2.11 ₂ (0.07)
Cosmetic effects	0.93 (0.02)	3.56 (0.06)	0.45 ₂ (0.04)	0.34 ₂ (0.04)	0.85 ₁ (0.03)	2.31 ₅ (0.08)	>	1.89 ₁ (0.07)

Note. Subscripts indicate differences in ad rank within column, *P* < .05. Standard interval scales (1–5) were used.

TABLE 3—Beliefs and Personality Traits as Predictors of Smoking Intent

	Reliability, α	Mean ^a	% Met Criterion ^b	B	SE	<i>t</i>
Beliefs						
Severity of health risks	.72	4.00	...	.16	.03	5.37**
Vulnerability to health risks	.82	4.18	...	-0.09	.03	-2.87**
Severity of social risks (of smoking)	.82	3.30	...	-0.21	.02	-9.66**
Vulnerability to social risks	.78	2.67	...	.09	.02	4.46**
Severity of tobacco marketing	.91	4.35	...	-0.13	.03	-4.31**
Vulnerability to tobacco marketing	.69	2.34	...	.19	.02	9.97**
Anti-industry motivation	.74	3.40	...	-0.10	.02	-4.23**
Personality traits						
Aggression	.85	...	39	.16	.06	2.60**
Anxiety	.89	...	53	.11	.06	2.04*
Attention deficit-hyperactivity disorder	.90	...	57	.03	.06	0.47
Conduct disorder	.85	...	19	.53	.07	7.22**
Depression	.88	...	30	.14	.06	2.24*
Low self-esteem	.80	...	54	.13	.06	2.38*
Sensation seeking	.72	...	53	.16	.05	3.28**

Note. Multiple regression results for beliefs showed an adjusted $R^2 = .17$, *P* < .01 (*df* for *t* tests = 1625). Multiple regression results for personality traits showed an adjusted $R^2 = .12$, *P* < .01 (*df* for *t* tests = 1561).

^aStandard interval scales (1–5) were used. For intent: $\alpha = .87$, mean = 1.66.

^bDiagnostic criteria for trait cutoffs were as follows: aggression, 4 of 8 symptoms; anxiety, 7 of 28 symptoms; attention-deficit/hyperactivity disorder, 6 of 18 symptoms; conduct disorder, 3 of 7 symptoms; depression, weighted score exceeding 23; low self-esteem, median split of 10 items; sensation seeking, median split of 4 items.

P* < .05; *P* < .01.

($F[1,1707] = 154.41$, *P* < .01), and an ad type \times conduct disorder 2-way interaction ($F[8,1707] = 2.28$, *P* < .05). Among all participants, no antismoking ad type lowered smoking intent (vs control condition). Among participants without conduct disorder, ads portraying disease and suffering significantly lowered mean smoking intent (vs control condition) and also reduced the proportion of participants who indicated intent to smoke by 42% (from 38% to 22%); no other ad type did so (Table 4). Among conduct-disordered participants, ad type did not significantly affect intent. In post hoc analyses, we verified that no other personality trait interacted with ad type to influence intent or any other outcome.

A 2-factor ANOVA on disgust revealed an antismoking ad main effect ($F[7,1418] = 4.72$, *P* < .01), a conduct disorder main effect ($F[1,1418] = 6.93$, *P* < .01), and a 2-way interaction ($F[7,1418] = 3.39$, *P* < .01). Among participants without conduct disorder, ad type influenced disgust ($F[7,1163] = 18.10$, *P* < .01), and ads depicting disease and suffering induced more disgust than any other ad type. Among conduct-disordered participants, ad type did not affect disgust ($F[7,255] = 1.10$, *P* = .36).

A 2-factor ANOVA on anti-industry motivation showed main effects for ad type ($F[8,1674] = 3.27$, *P* < .01) and for conduct disorder ($F[1,1674] = 47.86$, *P* < .01) but no interaction ($F[8,1674] = 1.42$, *P* = .18). However,

traits. Further analyses showed that conduct-disordered participants were substantially more likely than participants without conduct disorder to have smoked in their lifetime (68% vs 39%; $\chi^2 = 89.16$, *P* < .01) and in the

previous month (36% vs 13%; $\chi^2 = 93.59$, *P* < .01).

The 2-factor ANOVA on smoking intent revealed an ad type main effect ($F[8,1707] = 2.16$, *P* < .05), a conduct disorder main effect

TABLE 4—Antismoking Ad Effects on Outcome and Ad Measures

Ad Type	Smoking Intent, Mean (SE)	Smoking Intent, % Above Mean (SE)	Smoking Odds Ratio vs Control (95% Confidence Interval)	Disgust Evoked by Ads, Mean (SE)	Anti-Industry Motivation, Mean (SE)	Judged Ad Efficacy, Mean (SE)	Judged Ad Sensation Value, Mean (SE)
Overall (n = 1725)							
Disease and suffering	1.55 (0.07)	31.6 (0.03)	0.68 (0.45, 1.02)	3.50 ₁ (0.11)	3.65* (0.08)	1.17 ₁ (0.04)	3.09 ₂ (0.07)
Dying parent	1.62 (0.07)	34.2 (0.03)	0.76 (0.51, 1.14)	2.95 ₂ (0.10)	3.42 (0.08)	1.04 ₂ (0.04)	3.23 ₁ (0.07)
Environmental tobacco smoke	1.62 (0.07)	37.4 (0.04)	0.87 (0.58, 1.31)	2.88 ₂ (0.11)	3.29 (0.08)	0.91 ₂ (0.05)	2.88 ₄ (0.07)
Selling disease and death	1.73 (0.07)	38.1 (0.03)	0.90 (0.60, 1.35)	2.93 ₂ (0.11)	3.26 (0.08)	0.89 ₃ (0.04)	2.95 ₃ (0.07)
Counterindustry activism	1.64 (0.07)	34.6 (0.03)	0.77 (0.51, 1.16)	2.62 ₃ (0.11)	3.52 (0.08)	0.93 ₂ (0.05)	2.83 ₃ (0.07)
Marketing tactics	1.64 (0.08)	35.3 (0.03)	0.80 (0.53, 1.20)	2.52 ₃ (0.11)	3.47 (0.08)	0.92 ₂ (0.04)	2.80 ₆ (0.07)
Acceptance of nonsmokers	1.61 (0.08)	31.7 (0.03)	0.68 (0.45, 1.03)	2.08 ₄ (0.10)	3.41 (0.08)	0.88 ₃ (0.04)	2.30 ₈ (0.07)
Cosmetic effects	1.78 (0.07)	37.5 (0.03)	0.88 (0.59, 1.32)	2.94 ₂ (0.11)	3.29 (0.08)	0.83 ₃ (0.04)	2.58 ₇ (0.07)
Control	1.78 (0.07)	40.6 (0.03)	NA	NA	3.33 (0.08)	NA	NA
Participants without conduct disorder (n = 1404)							
Disease and suffering	1.34** (0.07)	22.0** (0.03)	0.46** (0.28, 0.75)	3.67 ₁ (0.12)	3.74* (0.09)	1.19 (0.05)	3.21 ₂ (0.08)
Dying parent	1.50 (0.07)	31.1 (0.04)	0.73 (0.47, 1.15)	2.99 ₃ (0.11)	3.49 (0.08)	1.02 (0.05)	3.24 ₁ (0.07)
Environmental tobacco smoke	1.52 (0.07)	32.5 (0.04)	0.78 (0.49, 1.23)	2.95 ₃ (0.12)	3.37 (0.09)	0.92 (0.05)	2.86 ₃ (0.08)
Selling disease and death	1.55 (0.07)	32.7 (0.04)	0.79 (0.50, 1.24)	2.98 ₃ (0.11)	3.36 (0.08)	0.90 (0.05)	2.97 ₃ (0.07)
Counterindustry activism	1.49 (0.07)	28.1 (0.04)	0.63 (0.39, 1.02)	2.56 ₄ (0.12)	3.65 (0.09)	0.98 (0.05)	2.87 ₃ (0.08)
Marketing tactics	1.56 (0.07)	30.8 (0.04)	0.72 (0.46, 1.14)	2.46 ₅ (0.11)	3.46 (0.09)	0.94 (0.05)	2.78 ₄ (0.07)
Acceptance of nonsmokers	1.52 (0.07)	30.3 (0.04)	0.70 (0.44, 1.12)	2.06 ₆ (0.11)	3.50 (0.09)	0.92 (0.05)	2.35 ₆ (0.07)
Cosmetic effects	1.49 (0.07)	29.3 (0.04)	0.67 (0.42, 1.07)	3.17 ₂ (0.12)	3.49 (0.09)	0.91 (0.05)	2.60 ₅ (0.08)
Control	1.69 (0.07)	38.2 (0.04)	NA	NA	3.40 (0.08)	NA	NA
Participants with conduct disorder (n = 321)							
Disease and suffering	2.31 (0.21)	65.1 (0.07)	1.52 (0.58, 3.98)	2.83 (0.25)	3.35 (0.18)	1.11 (0.10)	2.67 ₂ (0.15)
Dying parent	2.28 (0.24)	50.0 (0.09)	0.81 (0.30, 2.23)	2.75 (0.26)	3.07 (0.20)	1.13 (0.11)	3.19 ₁ (0.17)
Environmental tobacco smoke	2.06 (0.23)	58.3 (0.08)	1.14 (0.42, 3.05)	2.58 (0.26)	2.99 (0.19)	0.85 (0.11)	2.97 ₂ (0.16)
Selling disease and death	2.63 (0.24)	65.6 (0.08)	1.55 (0.55, 4.36)	2.67 (0.29)	2.71 (0.21)	0.83 (0.12)	2.85 ₂ (0.18)
Counterindustry activism	2.13 (0.20)	55.6 (0.07)	1.02 (0.40, 2.60)	2.82 (0.24)	3.12 (0.17)	0.74 (0.11)	2.72 ₂ (0.15)
Marketing tactics	2.02 (0.24)	58.1 (0.09)	1.12 (0.40, 3.13)	2.77 (0.27)	3.49 (0.21)	0.84 (0.11)	2.90 ₂ (0.17)
Acceptance of nonsmokers	2.07 (0.26)	39.3 (0.09)	0.53 (0.18, 1.51)	2.20 (0.30)	2.93 (0.22)	0.62 (0.13)	2.02 ₃ (0.19)
Cosmetic effects	2.73 (0.20)	64.4 (0.07)	1.47 (0.57, 3.82)	2.17 (0.23)	2.63 (0.17)	0.58 (0.10)	2.51 ₂ (0.15)
Control	2.32 (0.25)	55.2 (0.09)	NA	NA	2.92 (0.21)	NA	NA

Note. NA = not applicable. Subscripts indicate differences in ad rank within column for each panel (overall, participants without conduct disorder, participants with conduct disorder), $P < .05$. Standard interval scales (1–5) were used except for judged ad efficacy (0–2). * $P < .05$; ** $P < .01$ in comparisons between indicated antismoking ad type and control.

follow-up analyses showed that ads portraying disease and suffering (vs control ads) significantly enhanced anti-industry motivation only among participants without conduct disorder (Table 4). Ad type did not affect other beliefs.

To summarize, for participants without conduct disorder, ads depicting disease and suffering engendered disgust and anti-industry motivation, lowering smoking intent. Thus, we conducted standard regression-based tests⁷⁵ to verify that disgust and anti-industry motivation mediated the ad effects on intent. Disgust was predictive of anti-industry motivation

($B = .13$, $SE = .02$, $t[1136] = 6.30$, $P < .01$, adjusted $R^2 = .03$) and anti-industry motivation was predictive of intent ($B = -.12$, $SE = .02$, $t[1365] = -5.23$, $P < .01$, adjusted $R^2 = .02$). The ad type effect on anti-industry motivation ($B = -.04$, $SE = .01$, $t[1202] = -3.10$, $P = .002$, adjusted $R^2 = .01$) became nonsignificant ($B = -.02$, $SE = .01$, $t[1135] = -1.86$, $P = .06$) when disgust was included as a covariate ($B = .12$, $SE = .02$, $t[1135] = 5.85$, $P < .001$, adjusted $R^2 = .04$), indicating that disgust was a prime cause of anti-industry motivation. The effect of ad type on intent ($B = .02$, $SE = .01$,

$t[1229] = 2.23$, $P = .03$, adjusted $R^2 = .003$) became nonsignificant ($B = .01$, $SE = .01$, $t[1194] = 1.46$, $P = .15$) when anti-industry motivation was included as a covariate ($B = -.11$, $SE = .02$, $t[1194] = -4.56$, $P < .001$, adjusted $R^2 = .02$), indicating that anti-industry motivation was a prime cause of lowered intent.

Judged ad efficacy was influenced by ad type ($F[7,1404] = 6.41$, $P < .01$) and conduct disorder ($F[1,1404] = 11.35$, $P < .01$); the interaction was nonsignificant ($F[7,1404] = 1.66$, $P = .11$). In the total sample, ads depicting

disease and suffering had a significantly higher mean efficacy rating than any other ad type. The percentages who judged disease-and-suffering ads to be at least moderately effective were as follows: total sample, 89%; participants without conduct disorder, 90%; conduct-disordered participants, 84%. Judged ad sensation value was also influenced by ad type ($F[7,1410]=4.61, P<.05$) and conduct disorder ($F[1,1410]=11.27, P<.01$); there was no interaction ($F[7,1410]=1.60, P=.13$). Ads showing a dying parent consistently received the highest sensation value rating.

The higher the judged efficacy of the ads, the more the ads lowered mean smoking intent (vs the control condition) in the total sample ($r=0.71, B=.47, SE=.19, t[6]=2.48, P<.05$) and among those without conduct disorder ($r=0.92, B=.68, SE=.12, t[6]=5.80, P<.01$), but not among those with conduct disorder ($r=0.13, B=.18, SE=.54, t[6]=0.33, P=.75$). Ad sensation value did not predict actual ad efficacy at lowering intent.

DISCUSSION

Overall, our findings suggest that it is difficult to create effective antismoking ads for adolescents. Seven of the 8 ad types failed to significantly lower adolescents' intent to smoke (vs the control condition). The 1 ad type that significantly lowered most youths' intent to smoke, the disease-and-suffering ad type, focused on young victims suffering from devastating tobacco-related diseases. However, even this ad type did not lower smoking intent among adolescents with conduct disorder, who constituted 19% of the sample.

One of the effective disease-and-suffering ads featured a young woman with severe emphysema who showed all the pills she must take to stay alive. Her doctor displayed a diseased lung and stated that emphysema is incurable. Another effective ad depicted a young man, a smoker, with a bad cough and the onset of heart disease. The ad demonstrated the dangerous fatty deposits accumulating in his arteries and stated, "Every cigarette is doing you damage." Although these ads were clearly health-related, they did not affect health risk beliefs or elicit fear about health risks. Instead, most youths apparently

empathized with the victims and felt disgust and anti-industry motivation, which lowered their smoking intent (vs the control condition). Other research likewise indicates that showing innocent victims is an effective way to elicit empathy^{31,32} and disgust,^{22,23} and that disgust, not fear, motivates societal prohibitions and social activism.^{24–27}

We expected dying-parent and environmental-tobacco-smoke ads to perform similarly to disease-and-suffering ads. They did not. These 2 ad types elicited less disgust than disease-and-suffering ads, and they did not significantly increase anti-industry motivation or decrease smoking intent (vs the control condition). These ads emphasized that parents who smoke may harm their children by dying prematurely or by filling the air with toxins. Among adolescents, the parent-oriented messages may have lacked relevance. A previous copy test study²⁰ indicated that environmental tobacco smoke ads can lower adolescents' smoking intent if the ads convey that adolescent smokers risk peer disapproval. The social-message ads we tested—the type of ad often used by the tobacco industry—did not significantly lower smoking intent, perhaps because they did not credibly portray peer disapproval.²⁰

The counter-industry ads elicited less disgust than the disease-and-suffering ads, and they did not significantly enhance anti-industry motivation or reduce smoking intent (vs the control condition). Previous studies indicate that counter-industry ads can, however, increase adolescents' knowledge about the tobacco industry's manipulative and deceptive tactics.^{20,76} Hence, the counterindustry ads may have set the stage for the disease-and-suffering ads. The disease-and-suffering ads increased anti-industry motivation without even mentioning the tobacco industry. It seems that our California participants already knew whom to blame for the tobacco victims' suffering because of the state's counterindustry campaign.

Of the 24 US states conducting tobacco use prevention media campaigns, 15 (63%) employ counterindustry ads.¹ The decision to employ such ads may have been based on the reported successes of the Florida and American Legacy Foundation "truth" campaigns.^{50,76–80} However, earlier studies exam-

ined the "truth" campaign while it was still novel. Our participants had seen counter-industry ads since 1990.^{2,81} Consistent with our own findings, Thrasher et al.⁸² found that the national "truth" campaign had no effects in California, Massachusetts, or Florida, where well-funded counterindustry campaigns had already aired. Those researchers concluded that "anti-industry ad campaigns may have diminishing returns" and that "other prevention strategies may be needed."^{82(p287)} Our findings support this conclusion and suggest that disease-and-suffering ads may be useful as a supplemental approach. Massachusetts supplemented its counterindustry ads with disease-and-suffering ads, apparently with much success.^{2,83} From 1996 through 1999, adolescent smoking declined significantly more in Massachusetts than regionally or nationally.⁸⁴

Limitations

We did not study the ads' effects on smoking behavior. When major marketing firms conduct this type of copy test, they generally assess behavioral effects by offering participants free product samples immediately after ad exposure and seeing which products are chosen.⁸⁵ This simulated choice behavior has been shown to predict in-market sales.^{86–89} For ethical and other reasons, though, we could not offer adolescents cigarettes. Thus, our outcome measure was smoking intent. However, prospective studies have found that adolescents who do express intent to smoke are approximately 3 times as likely as those who do not to start smoking.^{70,90–94}

Another limitation is that when we classified ads into types, we considered only 2 executional factors: emotional tone and spokesperson age. Recent research indicates that testimonials may be especially effective,¹³ and we did not consider this factor. Thus, there is unexplained heterogeneity in the ad stimuli that likely affected the results. In other words, the results are partially a function of the specific ad exemplars used. There is no guarantee that other disease-and-suffering ads will work among adolescents, or that other ad types will necessarily fail. Health messages that elicit fear may do more harm than good among youths who feel unable to cope^{18,19} or who feel invincible and view smoking as forbidden fruit.^{17,20,21}

Recommendations to Practitioners

We make the following recommendations regarding tobacco control mass media campaigns for adolescents. (1) Consider using health ads that depict young adult victims suffering from devastating tobacco-related diseases; (2) try to evoke empathy for the victims, disgust, and anti-industry motivation in executing these ads rather than evoking fear; (3) copy test each ad before airing⁹⁵; (4) consider excluding highly troubled youths with conduct disorders, because their responses may be atypical, when screening copy test participants; (5) do not use an ad if it fails to produce statistically significant effects relative to the control or baseline condition, or produces adverse effects—try to improve it and then retest it.

In this study, participants' judgments of ad efficacy were significantly correlated with the ads' actual effectiveness at reducing smoking intent. However, research indicates that copy testing is the most reliable and valid method of ascertaining an ad's behavioral effects before airing.^{86,87} Copy testing is widely used by both marketing academics and practitioners, including the US government.^{86–89,95} Copy testing is more costly than focus group ad testing, primarily because larger samples are required⁹⁵; however, the costs are low compared with the costs of airing weak or even counterproductive ads. ■

About the Authors

Cornelia Pechmann is with the Paul Merage School of Business, University of California, Irvine. Ellen T. Reibling is with the Department of Health Education, University of California, Irvine.

Requests for reprints should be sent to Cornelia Pechmann, PhD, MS, MBA, Paul Merage School of Business, University of California, Irvine, Irvine, CA 92697 (e-mail: cpechman@uci.edu).

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Contributors

C. Pechmann originated the study and led the writing and analyses. E. Reibling supervised the study's implementation and assisted in the writing and analyses.

Human Participant Protection

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