

# An Experimental Investigation of the Joint Effects of Advertising and Peers on Adolescents' Beliefs and Intentions about Cigarette Consumption

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Ninth graders were randomly exposed to one of eight slice-of-life videotapes showing stimulus advertising (cigarette, antismoking, both, neither) and unfamiliar peers who either did or did not smoke cigarettes. The findings indicate that the cigarette advertising primed positive smoker stereotypes, which caused subjects to seek out favorable information about the peers shown smoking. Subjects' beliefs and intentions about cigarette consumption were thereby enhanced by the joint effects of advertising and peers. However, an antismoking advertisement shown in conjunction with cigarette advertising made salient negative smoker stereotypes, evoked unfavorable thoughts about peers shown smoking, and prevented cigarette advertising from promoting smoking.

Stereotypes are “abstract knowledge structures linking a social group to a set of traits or behavioral characteristics” that “guide the processing of information about the group” (Hamilton and Sherman 1994, p. 3; Weber and Crocker 1983). Consumption stereotypes are beliefs about the traits of people based on their use of products or brands that result in inferential self- and other judgments (Belk 1981; Belk, Bahn, and Mayer 1982). Stereotypes are most likely to be formed when products are both noticeable and distinctive such as clothing, cars, furniture—and cigarettes (Belk 1981). Consumption inferences have been found to impact both self-perceptions and self-esteem (Belk 1988; Belk et al. 1982; Solomon 1983). Not surprisingly, then, consumers engage in impression management, choosing products that they think will project a desired image and avoiding products that might denigrate their image (Belk et

al. 1982; Levy 1986; Solomon 1983). It has even been argued that “the symbolism embedded in many products is the primary reason for their purchase and use” (Solomon 1983, p. 326).

Research indicates that children learn about consumption stereotypes from four major socialization agents: peers, media, family, and schools (Belk et al. 1982; Churchill and Moschis 1979; John 1999; Moschis 1985). Further, children's ability to understand consumption stereotypes is almost fully developed by the sixth grade (Belk et al. 1982), when they are able to think abstractly and reflectively (John 1999). Once consumption stereotypes are formed, they tend to remain relatively stable (Belk et al. 1982). There are, however, some important exceptions to this rule. During adolescence, stereotypic beliefs about cigarette smoking, alcohol use, and illicit drug use change quite markedly from negative to neutral or even positive (Keefe 1994; Lynch and Bonnie 1994; Szalay, Strohl, and Doherty 1999). Such changes can cause youngsters to engage in risky consumption behaviors that endanger their health and well-being (Lynch and Bonnie 1994; U.S. Department of Health and Human Services [U.S. DHHS] 1995, 1996).

In this study, we ask the question, What might cause changes in consumption stereotypes in adolescence such that risky products are used? Specifically, what might weaken youths' negative stereotypes about cigarette smokers and make them want to use cigarettes as a means of positive self-expression? The vast majority of young children believe

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that smokers are engaging in a behavior that is unhealthy, unwise, and unattractive, and these beliefs deter them from smoking (Aitken and Eadie 1990; Burton et al. 1989; Chassin et al. 1981; Dinh et al. 1995; Lloyd and Lucas 1998). Yet, as youngsters transition to middle school and high school and are increasingly exposed to older students who smoke, many come to view smokers as attractive, popular, wise, and healthy (Aloise-Young, Hennigan, and Graham 1996; Dalton et al. 1999; Pederson et al. 1998). Longitudinal research shows that the more positively youngsters view smokers, the more likely they are to start smoking (Coe et al. 1982; Dinh et al. 1995).

To understand why smoker stereotypes might undergo such a marked change during adolescence, we conducted an experiment on the impact of three possible socialization agents: cigarette ads, antismoking ads, and unfamiliar peers who smoke. We exposed ninth-grade subjects to these types of socialization agents via slice-of-life videotapes, then measured their thoughts, beliefs, and intentions to smoke. Our findings indicate that negative smoker stereotypes may be either undermined or reinforced by the synergistic effects of smoking-related ads and peers who smoke (Romer and Jamieson 2001). Specifically, cigarette ads may prime (make salient) positive smoker stereotypes, causing adolescents to nonconsciously seek out favorable evidence about peers who smoke, while antismoking ads may have the opposite effects. Our results are consistent with Priming Theory (Bargh 1989), which we used as our theoretical framework. Our results are also consistent with the Bookkeeping Model of Stereotype Change, which posits that "each instance of stereotype-relevant information is used to modify the existing stereotype" (Weber and Crocker 1983, p. 962; also Hamilton and Sherman 1994). However, we show that the information used to update stereotypes need not be objective and can be biased due to advertising primes.

## LEARNING ABOUT CONSUMPTION STEREOTYPES

Young children most probably acquire their negative stereotypes about cigarette smokers from parents and teachers (Biglan et al. 1995; Bruvold 1993; Sussman et al. 1995; U.S. Centers for Disease Control and Prevention 1999). It is estimated that 25% of adolescents also hear antismoking messages from peers (Stanton and McGee 1996; also Keefe 1994). Finally, an increasing number of youngsters in the United States are exposed to antismoking ads that are funded by their states or by the national American Legacy Foundation, primarily with the money from the settlement between the U.S. attorneys general and tobacco firms (National Association of Attorneys General 2000).

What might cause adolescents to relinquish their negative smoker stereotypes? One factor might be the attractive, healthy, even glamorous models in cigarette advertising (Clark 1999; U.S. DHHS 1994, 1996). However, by the time children turn about eight years old, they seem to develop a healthy skepticism of advertising (Boush, Friestad, and Rose

1994; John 1999; Mangleburg and Bristol 1999). They "not only understand advertising's persuasive intent but also recognize the existence of bias and deception in advertising" (John 1999, p. 189). Youngsters may be especially suspicious of cigarette ads because most have been taught that smoking causes disease and death (Mizerski 1995; Phillips and Stavchansky 1999). Just as consumers ignore or counterargue messages that contradict their beliefs (Petty and Cacioppo 1986a, 1986b), youths may resist influence attempts from cigarette ads.

Numerous studies show that adolescents whose friends smoke are at greater risk of starting (Aloise-Young, Graham, and Hansen 1994; Biglan et al. 1995; Jackson 1997). Direct peer pressure to smoke, in the form of cigarette offers and so forth (Graham, Marks, and Hansen 1991; Jackson 1997; Sussman et al. 1993), seems to be relatively rare. Only about 3%–12% of youngsters report experiencing direct peer pressure (Friedman, Lichtenstein, and Biglan 1985; Keefe 1994; Stanton and McGee 1996). It seems that most youth start smoking because they perceive that smokers are popular and well respected (Aloise-Young et al. 1994; Sherman et al. 1983; Stacy et al. 1992). In the United States, smoking rates increase sharply during grades five to 12 (Lynch and Bonnie 1994; *Morbidity and Mortality Weekly Report* 1996, 1998), and youths may mistakenly interpret this trend as evidence that smoking is popular. Should we therefore conclude that underage smoking is primarily caused by peer pressure in adolescence?

We posit that yet another important mechanism may be at work that causes adolescents to adopt positive smoker stereotypes and, often, to start smoking. Cigarette ads may prime or make salient the notion that smokers are attractive, successful, and healthy, an image that is frequently conveyed in movies as well (Pechmann and Shih 1999). A prime is "an activating stimulus event" that causes a "preactivation of social constructs or knowledge structures" (Bargh 1989, p. 18). Primes have been found to nonconsciously stimulate search for construct-consistent information (Bargh 1989; Kelly 1955). Thus, a positive smoker stereotype that is activated by cigarette ads may cause youth to inadvertently seek out favorable evidence about smokers. Seemingly due to this favorable evidence, but in actuality because the cigarette ads drove perceptions to be favorable, youth may gradually come to believe that smokers have desirable traits (Deighton 1984; Hoch and Ha 1986). Accordingly, they may become interested in smoking themselves (Belk 1981). Since this process is nonconscious, youngsters may be unable to protect themselves (O'Guinn and Shrum 1997; Shrum, Wyer, and O'Guinn 1998). As Herr (1989, p. 68) notes, "it is difficult to resist an influence of which one is unaware."

## PRIMING THEORY AND CHANGES IN CONSUMPTION SYMBOLISM

### Priming and Stereotype Maintenance

Researchers have found that a chronically accessible or enduringly salient stereotype tends to be self-perpetuating

**TABLE 1**  
COMPARISON OF PRIMING STUDIES

	Standard approach	Past marketing studies	Our study
Presence of prime	Independent variable (present vs. absent)	Independent variable (present vs. absent)	Independent variable (present vs. absent)
Exposure to "target" (source of evidence")	Held constant (exposed)	Often a moderator (exposed vs. unexposed)	Moderator (exposed vs. unexposed)
Nature of target	Individual person	Product	Product user
Ambiguity of evidence regarding target	Held constant (ambiguous)	Often a moderator (ambiguous vs. unambiguous)	Held constant (ambiguous)
Prime as compared to prior belief	Prime reflects prevailing belief	Prime reflects alternate belief	Moderator (prevailing belief vs. alternate belief vs. both)
Dependent variables	Perceptions, treatment of individual person	Updated beliefs about product	Updated stereotypes about product users, intent to use product
Subjects	Adults	Adults	Adolescents

because it causes people to perceive and/or remember ambiguous information about others as stereotype confirming (Bargh et al. 1986; Bargh 1997). For instance, a common stereotype is that men are more famous than women, and so Banaji and Greenwald (1995) exposed subjects to an equal number of names that were male-famous, male-not famous, female-famous, and female-not famous. A day later, subjects incorrectly judged many of the familiar male names to be famous. In other words, subjects found evidence that males on the list were more famous than females.

A weaker stereotype that is primed or made temporarily salient also tends to be self-reinforcing (Bargh 1997; Bargh et al. 1986; Lombardi, Higgins, and Bargh 1987). Banaji, Hardin, and Rothman (1993) found that males who were suitably primed found evidence to support the stereotype that females are dependent. A word task was used to prime salient constructs such as "can't make decisions." In a later and ostensibly unrelated task, subjects read ambiguous statements about an unfamiliar female target. Males who were exposed to the dependent (vs. neutral) prime rated the female target as more dependent. In other studies, primes have impacted subjects' treatment of the target and ratings of the target's overall appeal (Bargh, Chen, and Burrows 1996; Skowronski, Carlston, and Isham 1993). Effects have been observed after a 24-hour delay (Srull and Wyer 1979) and have lasted for up to 14 days (Higgins, Rholes, and Jones 1977).

Similar effects have been produced by mass media primes such as newspaper articles, television shows, and advertisements (Krosnick and Kinder 1990; Sherman, Mackie, and Driscoll 1990; Shrum et al. 1998). Rudman and Borgida (1995) exposed male subjects to television ads that primed the stereotype of women as sex objects and then assessed the impact on a simulated job interview with a female research confederate. The sexist (vs. neutral) ads caused the males to sit closer to the female, recall more information about her physical attributes and less about her job-related qualifications, and to judge her to be less competent (also McKenzie-Mohr and Zanna 1990). Males with chronic sexist beliefs behaved similarly to the primed males, and the

effects for chronicity and priming were additive (as in Bargh et al. 1996). In Hansen and Hansen (1990), a movie video that depicted antisocial behavior caused subjects to excuse a job candidate's obscene gesture.

### Priming and Stereotype Change

In the aforementioned studies, subjects saw primes that boosted the salience of their prevailing negative stereotypes, were exposed to an unfamiliar person from the stereotyped group, and were asked to judge that specific person. The information about the unfamiliar person was ambiguous, and all subjects were required to evaluate the unfamiliar person as the main dependent variable. The studies were conducted primarily by psychologists. The main goal was to investigate whether the priming of negative stereotypes might result in discriminatory behavior.

Marketers are often interested in ads that promote positive stereotypes about consumption; they want to increase product or brand sales (Solomon 1983). Since consumers' pre-existing consumption stereotypes may be negative, it is often necessary to use ads that make salient alternate and more positive stereotypes. Further, in order for priming to occur, an ad prime must be followed by exposure to ambiguous product evidence (Deighton 1984; Hoch and Ha 1986). Since exposure to ads and evidence may occur independently rather than jointly, marketers benefit from knowing the effects of each factor alone as well as the two factors combined. Hence, when priming research has been conducted by marketers and consumer behaviorists (Deighton 1984; Ha and Hoch 1989; Herr 1989; Hoch and Ha 1986; Meyers-Levy and Sternthal 1993; Yi 1990), it has been necessary to modify the standard priming research paradigm, as shown in table 1. However, the theory-based predictions and findings have largely remained unchanged.<sup>1</sup>

Several studies have explored whether ads may function

<sup>1</sup>Strictly speaking, some of these studies dealt with confirmatory search. However, priming appears to be the most likely psychological cause of the confirmatory search.

as primes and, in conjunction with ambiguous product evidence, change product beliefs (Herr 1989; Hoch and Deighton 1989; Hoch and Ha 1986; Yi 1990). In Hoch and Ha (1986), the stimulus ad sought to persuade consumers that the quality of J. C. Penney brand polo shirts had improved. When subjects saw just the ad, it had no discernible impact on their brand beliefs, presumably because it was counter-attitudinal and lacked credibility (Hoch and Ha 1986). When subjects saw just the J. C. Penney shirt, they were so negatively disposed toward it that they sought out evidence to prove it was of low quality. However, when subjects saw the ad and then the J. C. Penney shirt, their product quality beliefs markedly improved. Apparently, the ad made salient the rival hypothesis that J. C. Penney now makes high-quality shirts and caused subjects to search for evidence of that high quality. Since the data were ambiguous, evidence could be found or assimilated and enhanced subjects' beliefs regarding J. C. Penney shirts. In sum, Hoch and Ha (1986) and others (Deighton 1984; Ha and Hoch 1989; Yi 1990) have found support for a two-step model of advertising effects, in which advertising plus evidence promotes more positive product beliefs, even when neither factor alone is able to do so.

Our goal was to broaden this past work (Deighton 1984; Hoch and Deighton 1989; Hoch and Ha 1986; Yi 1990) by extending it into the important substantive areas of consumer socialization and tobacco-use prevention. We would examine a negative stereotype that prevented adolescents from engaging in a risky consumption behavior and assess whether this stereotype could be weakened by the interactive effects of ads and evidence regarding peers who engage in that risky behavior. While previous marketing studies had dealt with noncontroversial topics such as clothing quality, ours would address the contentious issue of smoking. Our subjects' beliefs might, therefore, be more resistant to change. In addition, while previous work in marketing had assessed changes in product beliefs, we would investigate changes in product-user stereotypes. While past subjects had either physically examined or read descriptions of products, our subjects would watch product users on videotape. Finally, unlike previous studies, we would manipulate the ad primes to reflect either the dominant negative stereotype, the rival positive stereotype, or both stereotypes. Hence, while our study would be grounded in priming theory and in past work in both psychology and marketing, we would also extend this work in several ways (see table 1).

Our main objective was to determine if cigarette ads might function as primes and favorably bias adolescents' perceptions of peers who smoke. In other words, we wanted to see if ads and evidence would yield synergistic effects. We also wanted to see if cigarette ads or evidence from peer smokers would have effects on their own (main effects). Finally, we felt it was important to assess the impact of antismoking ads, both alone and in conjunction with these other stimuli. Pechmann and Ratneshwar (1994) investigated smoking-related ad effects on seventh graders with strong antismoking views. The antismoking ads negatively

impacted smoking-related thoughts and beliefs. The cigarette ads had weak positive effects on thoughts. Their study did not examine the joint impact of ads and evidence or the impact of evidence alone, nor did it measure intentions to smoke.

## Research Hypotheses

*Cigarette Advertising.* Our study exposed subjects to videotapes briefly showing cigarette ads in retail store windows, bus kiosks, and so forth. We expected subjects to notice the ads but not to closely scrutinize them, as in many other real-world contexts that are conducive to priming (Bargh 1989; Herr 1989). When people are aware of primes, they may exhibit strong reactance or contrast effects (Herr 1989; Meyers-Levy and Sternthal 1993; Petty and Wegener 1993). Since the cigarette ads would contradict subjects' negative stereotypic beliefs (Chassin et al. 1981; Dinh et al. 1995; Lloyd and Lucas 1998; Pechmann and Ratneshwar 1994), a contrast effect in the form of counterargumentation was a distinct possibility (Mizerski 1995; Phillips and Stavchansky 1999). However, because the cigarette advertising exposure would be brief and innocuous, we did not expect it to have much impact on its own, either positive or negative (no main effect).

We did, however, expect the cigarette ads to prime a positive smoker stereotype, such that subjects would briefly entertain the notion that smokers are healthy, attractive, and successful. We expected that rival stereotype, once accessible in memory, to exert nonconscious effects and positively bias subjects' perceptions of smokers. According to prior research, even subjects with chronically accessible beliefs can be influenced by rival primes (Bargh, Lombardi, and Higgins 1988; Hoch and Ha 1986). Accordingly, we predicted that our primed subjects would report more favorable thoughts about the smokers on the videotape, assuming the thoughts were still accessible when measured (Pechmann and Ratneshwar 1994). Further, subjects' beliefs about smokers should become more favorable and their intentions to smoke should increase.

Subjects who saw cigarette ads followed by smokers should also recall the ads better (Banaji et al. 1993). If they evaluated the smokers more favorably because of the cigarette ads, the ads themselves should become more salient and easier to recollect. However, subjects should not be cognizant of having been influenced by the ads. Further, we expected to see priming effects even among subjects who reported no recall of the ads (Banaji et al. 1993; Lombardi et al. 1987). Our formal predictions were as follows:

- H1:** Adolescents who see cigarette (vs. control) ads and then see peers smoking should manifest more positive (a) thoughts about those peers, (b) smoker stereotypes, and (c) intentions to smoke. These effects should not attain if adolescents see peers who are not smoking. Further, adolescents who are exposed to cigarette ads and then see smokers

(vs. nonsmokers) should report higher cigarette-ad recall, though the aforementioned effects should not be contingent on ad recall.

*Antismoking Advertising.* The antismoking advertising was expected to remind subjects of their prior beliefs that smokers are engaging in a behavior that is unwise, unhealthy, and unattractive (Chassin et al. 1981; Dinh et al. 1995; Lloyd and Lucas 1998). If subjects later saw smokers, they were expected to generate negative stereotypic thoughts about such individuals. In other words, we expected to see a classic priming effect: make salient a stereotype and impact person perceptions (Banaji et al. 1993; Bargh 1997; Bargh et al. 1986; Lombardi et al. 1987). We anticipated that subjects' negative thoughts would be readily recalled, even if measured much later in time, as they would be based on schemas stored in, and accessible from, long-term memory (Pechmann and Ratneshwar 1994). The antismoking advertising was also expected to cause subjects to look for additional unfavorable evidence about the smokers on the videotape. If such evidence was found, subjects were expected to report more extreme negative stereotypes and even lower smoking intentions.

What might happen if subjects saw both cigarette ads and antismoking ads? The U.S. Centers for Disease Control and Prevention (1999) recommends that roughly one dollar be spent on antismoking ads for every three dollars spent on cigarette ads. We reasoned that a single antismoking ad might be able to offset the impact of three cigarette ads because, once negative prior beliefs are brought to the forefront of memory, they should dominate perceptions. Research has shown that chronically accessible constructs replace rival primed ones within just a few minutes (Bargh et al. 1988). Although our ninth-grade subjects' negative stereotypes were not expected to be chronic because antismoking sentiment weakens in high school (Lynch and Bonnie 1994), prior beliefs made salient by antismoking ads were expected to take precedent (Pechmann and Shih 1999). Formally:

**H2:** Adolescents who see antismoking (vs. control) ads either alone or in conjunction with cigarette ads and then see peers smoking should manifest more negative (a) thoughts about those peers, (b) smoker stereotypes, and (c) intentions to smoke. These effects should not attain if adolescents see peers who are not smoking.

*Control Advertising.* Finally, we considered how subjects might react when they saw control ads and then observed peers who were smoking. We expected that the smokers would have a limited impact on their own, as these individuals would be strangers to the subjects and would not directly advocate smoking. Further, we would ensure that the data regarding these smokers would be ambiguous, consisting of an equal mix of favorable and unfavorable data points (Hoch and Ha 1986). Thus, subjects' reactions would likely depend on how they interpreted the data. If their negative smoker stereotypes

were chronically accessible, they would presumably focus on unfavorable data points (Bargh et al. 1986, 1988; Higgins, King, and Mavin 1982). However, we did not expect subjects' negative smoker stereotypes to be chronic, as discussed earlier. Since the evidence regarding smokers would be neutral and, without priming, subjects would presumably view this evidence objectively, beliefs and intentions would likely remain unchanged.

**H3:** When adolescents see control ads, exposure to peers smoking (vs. not smoking) should not impact their (a) thoughts about the peers, (b) smoker stereotypes, or (c) intentions to smoke.

## RESEARCH METHOD

### Design and Subjects

A full factorial design was used, with two manipulated factors. Ad condition had four levels: Subjects either viewed four cigarette ads, four antismoking ads, three cigarette ads plus one antismoking ad, or four control ads in a 12-minute, slice-of-life videotape. In addition, on the videotape, subjects were exposed to unfamiliar peers either smoking cigarettes or not doing so.<sup>2</sup> Each of the 718 subjects was randomly assigned to one of the eight (4 × 2) cells of the design, resulting in about 90 subjects per cell.

Subjects were ninth graders from four California high schools; they had signed assent forms and obtained parental consent. Ninth graders were used because more students start smoking in that grade than at any other time (Escobedo et al. 1993). Fifty-two percent of the subjects were female, and most (70%) were 14 years old. The schools were located in middle-class, racially mixed neighborhoods. Fifty-three percent of the subjects were Caucasian, 27% were Hispanic, 12% were Asian, and 8% were some other ethnicity. To minimize self-selection bias and demand effects, we did not mention smoking in the consent forms.

Since subjects' prior interest in smoking could have moderated their responses to the experimental stimuli, we measured that variable in a confidential health survey approximately three weeks before the main study. To minimize the likelihood that subjects would connect the health survey to the main survey, we used different research assistants and unique questionnaires and formats. Subjects were classified into two groups according to whether they expressed no interest (48%) or a possible interest in smoking in the future (Pierce et al. 1995). This factor did not affect any of the results, however, so it was dropped from the analyses. The health survey showed that most subjects were nonsmokers. In reporting their lifetime use of cigarettes, 64% of subjects

<sup>2</sup>We exposed subjects to unfamiliar peers to conform to past priming studies (e.g., Banaji et al. 1993). Also, we wanted to hold constant the group of peers to avoid potential confounds, and no single group of peers would have been equally familiar to all 700 of our subjects. Since youth are more likely to be influenced by familiar than unfamiliar peers (Aloise-Young et al. 1996), using unfamiliar peers probably provided a conservative test of our hypotheses.

said they had never tried a cigarette, 24% reported smoking less than 10 cigarettes, 8% reported smoking less than five packs, and just 4% reported smoking over five packs.

### Stimulus Videotapes

The stimulus videotapes were professionally scripted, produced, acted, and edited. Eight versions were created, corresponding to the eight-cell design. Of the 12 minutes of footage, over 10 minutes were identical, with the rest varying by experimental condition. The videotapes appeared to show a day in the life of five high school students, one of whom is enrolled in an advertising design class and is required to videotape 20 randomly selected ads as a homework assignment. The student enlists the help of four friends and videotapes them extensively, creating a short documentary. The friends consist of a Caucasian male and female, a Hispanic male, and an Asian female, who ranged in physical attractiveness from attractive to somewhat unattractive.

During the first videotape segment, lasting seven minutes, the students are introduced and shown working on the ad-related homework. The student who is the videographer films 16 filler ads and four stimulus ads (details follow). Each stimulus ad is filmed for 12 seconds toward the end of the first segment. The second segment lasts two minutes and shows the students eating outdoors at a fast-food restaurant. In the smoking versions of the videotape, each of the four protagonists is shown smoking for about 12 seconds. They light up after their meal, take drags, exhale, and/or gesture with their cigarettes. In the final videotape segment, which lasts three minutes, the protagonists congregate in a park and talk about the future.

### Stimulus Advertisements

Twelve cigarette ads from recently published magazines were pretested on 47 subjects, and four ads were chosen for the main study. The chosen ads seemed to depict the positive smoker stereotype most effectively. A Newport ad featured a fun-loving couple engaged in outdoor recreation, a Camel ad depicted a crowded bar filled with sexy couples and fun activities, a Kool ad showed a handsome and intelligent male, and a Capri ad depicted a glamorous female. All models appeared to be in their mid-20s. The ads had been used several months before the main study and, according to the ad-recall data (below), had been forgotten by or were unfamiliar to most subjects.

Likewise, 12 antismoking print ads were pretested, and four were chosen that seemed to most directly reinforce adolescents' negative smoker stereotypes. "Smoking Stinks" depicted an attractive young female who is repulsed by a male smoker's breath. "How to Spot a Nerd" portrayed a young male smoker who is depicted as unattractive and unpopular. "Old Lady" showed the face of a wrinkled, androgynous, and unglamorous smoker. "Tar Face" depicted a smoker covered with oozing tar, unsuccessfully trying to claw it off. The ad-recall data indicated low levels of ad familiarity. Subjects in the antismoking ad condition saw all

four ads. Subjects in the mixed condition (three cigarette ads and one antismoking ad) saw the Camel, Kool, Capri, and "Smoking Stinks" ads, with the antismoking ad appearing last. The control ads were obtained at the same time as the cigarette ads, were stylistically similar to those ads, and appeared to be unfamiliar to subjects as well. They promoted Jordache cologne, Gitano jeans, Guess fashions, and Navy perfume.

To reflect the diversity of print and outdoor ad media, in all conditions one stimulus ad (chosen at random) appeared on a minibillboard, one in a magazine, one on a bus kiosk, and one as a poster on a store window. Since we only collected magazine ads, we enlarged those ads for use in the other formats, though the other formats could have existed as well. The filler ads promoted a variety of products and services such as Budweiser and Coors beer, Arizona beverages, Tide detergent, and Baskin Robbins ice cream, and they appeared in similar print and outdoor media. To make any antismoking ads appear less conspicuous, we included two public service announcements among the filler ads, one on drinking and driving and the other on unwanted pregnancies.

### Evidence regarding Peers

Virtually all priming researchers assume that person-perception data will be inherently ambiguous (e.g., Banaji et al. 1993; Bargh et al. 1986; Lombardi et al. 1987). However, to ensure that our data on the unfamiliar peers would be ambiguous (Hoch and Ha 1986), the videotape script was carefully written so that it contained an equal mix of positive and negative information about the protagonists, which was verified by two coders. The data were ambiguous or mixed with respect to the traits comprising the smoker stereotype (e.g., attractive) and other extraneous traits (e.g., contented; Pechmann and Ratneshwar 1994). For example, one teenager complained about not having dates, while two others planned a date together. One teenager complained about having no money, a menial after-school job, and poor grades. Others were doing well at school and discussed plans to go to college and become wealthy professionals. In other words, we tried to simulate the real world, in which adolescents experience a variety of smokers, some with more favorable traits than others. Their encounters may also vary, some being more favorable than others. In pretests, subjects indicated that the videotapes were realistic.

### Data Collection Procedures

Data collection at each school was completed in a single day. The data were collected in two concurrent sessions led by trained graduate-level research assistants. Each session lasted approximately 50 minutes or one class period. Two classrooms were reserved in advance and equipped with large-screen color televisions, stereo speakers, and video-cassette recorders. We rented a standard set of equipment from a professional firm to avoid any possible confounds resulting from equipment heterogeneity across schools or

sessions. An average of 12 data collection sessions were conducted at each school, or two sessions per class period, with 15 subjects per session. Teachers announced that participating students should report to a predetermined meeting place. Nonparticipants remained with their teachers and did homework.

When subjects arrived at the meeting place, they were randomly assigned to one of two classrooms. With a random number algorithm, we determined in advance the videotape to be shown in each room. Subjects were met by a graduate research assistant who read the following cover story: "We are conducting a study on how high school students form impressions of other teenagers. Soon, you will watch a videotape about students from a high school like yours. Afterwards, you will be asked to complete a questionnaire. You will be asked to indicate what you think about various types of teenagers. Your individual, honest responses will be very valuable to us and will be seen only by the researchers who are conducting this study."

After subjects watched the stimulus videotapes, they completed a written survey that assessed their beliefs about "most typical teenagers," "a teenager who smokes cigarettes," "a teenager who drinks beer," and "a teenage movie star" (in that order). The nonsmoking-related questions were included as distracter items. Next, subjects were instructed to "write down your thoughts and impressions about the teenagers who were shown on the videotape." Further, we included manipulation and suspicion checks by asking subjects to write down "all the ads you can remember that the teenagers found for the homework assignment," "what the teenagers were doing in the restaurant," and "what you think the study was about." Filler questions included the following: "What events were the teenagers going to attend the following weekend?" and "What professions were the teenagers planning to pursue?" The final set of questions assessed age, gender, race, and past and intended future consumption of cigarettes and beer.

To encourage honest responses, we asked students to place completed surveys in unmarked envelopes and labeled the surveys with discrete ID numbers; teachers were not present. In addition, 75% of the survey questions were filler items. This masked the study's purpose and lessened demand effects. About one month after data collection was completed at a school, subjects were reconvened to participate in an antismoking educational seminar conducted by a health educator. This countered any effects the smoking-related stimuli might have had.

## Dependent Measures

*Stereotypic Beliefs.* Stereotypic beliefs about a "teenage smoker" were assessed with 12, nine-point semantic differential items with higher numbers being more favorable. The items were as follows: fun/boring, well-liked/disliked, sexy/not sexy, desirable to date/undesirable to date, successful/unsuccessful, smart/dumb, intelligent/stupid, healthy/unhealthy, well/sickly, natural smelling/stinky, cool/uncool, and

winner/loser. We also included four items that did not appear to be part of adolescents' negative smoker stereotype (Pechmann and Ratneshwar 1994): contented/worried, relaxed/tense, risk taking/risk averse, and rebellious/conforming. These items were included because priming effects should only be observed with respect to stereotypic beliefs (Banaji et al. 1993). The belief data were subjected to a principal components factor analysis. Three factors were extracted (eigenvalues > 1); they explained 52%, 15%, and 11% of the variance, respectively. The largest factor contained the 12 traits comprising the negative smoker stereotype. We called it the stereotypic beliefs factor ( $\alpha = .97$ ). The second factor, rebelliousness, consisted of the items rebelliousness and risk taking ( $\alpha = .86$ ). The third factor, contentedness, contained the items contented and relaxed ( $\alpha = .89$ ).

*Behavioral Intentions.* We measured subjects' intentions to smoke by asking them the following questions: "At any time during the next year, do you think you will smoke one puff or more of a cigarette?" and, "If your best friend dared you, would you smoke a cigarette?" (scale end points: 1 = definitely no, 4 = definitely yes). Prior research indicates that these two questions provide a reasonably valid measure of future smoking behavior (Pierce, Gilpin, and Choi 1995). Responses were averaged, and the scale had an alpha of .90.

*Thoughts.* Subjects' responses to the open-ended questions regarding the protagonists on the videotape were coded by two research assistants who were extensively trained and blind to the experimental conditions. The proportional reduction in loss (PRL) reliabilities (Rust and Cooil 1994) met or exceeded .92 for each code. Each thought was coded for valence (positive, negative, or neutral) and relevance (meaning whether it referred to one or more of the protagonists either by name or by a more general term such as "the guys on the tape"). Only relevant thoughts were analyzed. The coded thought data were later aggregated to create an index that represented the number of positive thoughts minus the number of negative thoughts.

*Recall and Suspicion.* We coded subjects' thoughts about the stimulus ads to determine whether they freely recalled seeing these ads. Recall was coded affirmatively if a subject mentioned the topic (e.g., cigarette ads, antismoking ads, perfume ads), brand name (e.g., Kool, Camel, or Guess), or headline (e.g., "Dazzling") or if the subject described a unique visual image (e.g., smoker with slime). Most subjects could recall virtually nothing about the ads except the topics. In other words, the recall data indicate low levels of ad familiarity and ad processing. We coded subjects' thoughts about the restaurant scene to determine whether they recalled one or more of the teenagers smoking (yes vs. no). Finally, we coded thoughts to reflect whether subjects guessed that the study might pertain to smoking-related ads only, smoking behavior only, both, or neither. The PRL reliabilities (Rust and Cooil 1994) were .90 or greater.

## ANALYSES AND RESULTS

### Prior Stereotypic Beliefs about Smokers

As we expected, our control subjects (the ones who saw control ads and no peer smoking) reported negative smoker stereotypes. Using a repeated measures ANOVA, we compared control subjects' ratings of a teenage smoker versus a typical teenager. The smoker was rated significantly less favorably on the stereotypic smoker traits (difference score =  $-3.43$ ,  $F(1, 87) = 192.02$ ,  $p < .01$ ). The smoker was also rated somewhat lower than a typical teen on the nonstereotypic trait of contentment (difference score =  $-1.77$ ,  $F(1, 87) = 33.63$ ,  $p < .01$ ). Finally, the smoker was rated similarly to a typical teen on the nonstereotypic trait of rebelliousness (difference score =  $.23$ ,  $F(1, 87) = .48$ ,  $p > .45$ ). We ran all subsequent analyses using subjects' ratings of a smoker as well as the difference in their ratings of a smoker versus a typical teen, but the results were consistent, and so we focus on their ratings of a smoker.

### Manipulation Checks

Subjects' recall of the stimulus materials indicated that our experimental manipulations were successful (see table 2). On average, 80% of the subjects who saw the videos with smoking recalled the smoking, while less than 1% of the subjects who saw the nonsmoking videos claimed they saw smoking ( $\chi^2(1) = 436.33$ ,  $p < .01$ ). Recall of cigarette advertising was, on average, 76% for videos showing four cigarette ads, 83% for videos showing one antismoking plus three cigarette ads, and 6% or less otherwise ( $\chi^2(3) = 401.69$ ,  $p < .01$ ). Recall of antismoking advertising was, on average, 78% for videos showing four antismoking ads, 44% for videos showing one antismoking ad plus three cigarette ads, and 2% or less otherwise ( $\chi^2(3) = 321.10$ ,  $p < .01$ ). Recall of the control advertising averaged 57% for the con-

trol ad videos and 1% or less otherwise ( $\chi^2(3) = 326.08$ ,  $p < .01$ ).

### Suspicion Checks

Less than 1% of the subjects suspected that the study pertained to smoking-related ads and smoking behavior, 3% suspected the ads only, and 6% suspected smoking only (see table 2). Suspicion that the study might deal with ads did not vary by condition ( $p$ 's  $> .10$ ). Subjects were more likely to suspect that the research pertained to smoking if, in addition to seeing antismoking advertising, they saw (vs. did not see) peers smoking. (For the antismoking ad only condition:  $\chi^2(1) = 8.86$ ,  $p < .01$ ; for the cigarette plus antismoking ad condition:  $\chi^2(1) = 8.35$ ,  $p < .01$ ; otherwise  $p$ 's  $> .09$ .) Overall, though, suspicion levels were low. Also, when subjects who suspected that the study might be about smoking behavior and/or advertising were excluded from the analyses, the findings were unaffected.

### Hypotheses Tests

*Analyses.* To test our hypotheses regarding the effects of ads and peers on thoughts, beliefs, and intentions, we conducted two-way ANOVAs. The  $F$ -statistics for each main effect and interaction effect are provided in table 3. If the ad by peer smoking interaction term for a measure was significant at  $p < .05$ , we examined the effect of ad type (cigarette vs. control, antismoking vs. control, and cigarette plus antismoking vs. control) within each level of peer smoking with two-tailed  $t$ -tests. We used a Dunn-Sidak critical  $t$ -statistic because we used the control mean in three comparisons (Kirk 1982).

*Stereotypic Beliefs and Intentions.* As we predicted, advertising and peer smoking interactively affected stereotypic beliefs about a smoker ( $p < .05$ ). There was also a

TABLE 2  
CELL PROPORTIONS FOR SUSPICION AND MANIPULATION CHECKS

Dependent variable	Four control ads		Four cigarette ads		Four antismoking ads		Three cigarette ads and one antismoking ad	
	No peers smoking ( $n = 88$ )	Peers smoking ( $n = 89$ )	No peers smoking ( $n = 87$ )	Peers smoking ( $n = 92$ )	No peers smoking ( $n = 94$ )	Peers smoking ( $n = 88$ )	No peers smoking ( $n = 90$ )	Peers smoking ( $n = 90$ )
Free recall of smoking behavior	.00	.86	.01	.74	.02	.81	.01	.81
Free recall of cigarette advertising	.00	.04	.66	.85	.01	.09	.80	.86
Free recall of antismoking advertising	.02	.02	.01	.00	.82	.74	.41	.47
Free recall of control advertising	.53	.61	.00	.00	.00	.00	.02	.00
Suspicion that study was about smoking behavior	.01	.05	.01	.07	.03	.16	.01	.13
Suspicion that study was about smoking-related ads	.01	.01	.00	.00	.02	.06	.05	.05



**TABLE 3**  
F-STATISTICS FOR MAIN DEPENDENT VARIABLES

Dependent variable	Advertising main effect (df = 1, 710)	Peer main effect (df = 1, 710)	Advertising by peer interaction effect (df = 3, 710)
Stereotypic beliefs about smokers	3.77**	1.29	2.59*
Belief that smokers are rebellious (nonstereotypic)	.27	.42	.70
Belief that smokers are contented (nonstereotypic)	1.25	.02	.88
Intentions to smoke	.92	.28	3.43*
Valenced thoughts about peers	2.74*	25.02**	2.60*

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

main effect for the advertising on stereotypic beliefs ( $p < .01$ ) but no main effect for peer smoking ( $p > .25$ ). (Refer to table 3 for  $F$ -statistics.) For nonstereotypic beliefs, there were no main effects ( $p$ 's  $> .25$ ) or interactions ( $p$ 's  $> .45$ ). For intentions to smoke, there was an ad by peer smoking interaction ( $p < .05$ ) and no main effects ( $p$ 's  $> .40$ ).

Follow-up analyses of subjects who saw peers smoking revealed that cigarette (vs. control) ads weakened their negative stereotypic beliefs ( $t(710) = 3.62, p < .01$ ) and increased their intentions to smoke ( $t(710) = 2.99, p < .01$ ). (See table 4 for means.) When subjects saw peers who were not smoking, cigarette (vs. control) ads had no impact on stereotypic beliefs or intentions ( $p$ 's  $> .40$ ). The antismoking (vs. control) ads had no impact on beliefs or intentions, regardless of whether shown with smokers or nonsmokers ( $p$ 's  $> .10$ ).

We then examined subjects who only saw control ads. Exposure to smokers (vs. nonsmokers) had no impact on their stereotypic beliefs or intentions ( $p$ 's  $> .40$ ). Finally, we tested the mediational hypothesis that subjects who saw cigarette (vs. control) ads followed by smokers reported higher intentions to smoke due to their more favorable stereotypic beliefs about smokers. The findings were supportive. In the peer smoking condition, the effect of cigarette (vs. control) ads on intentions ( $F(1, 174) = 7.62, p < .01$ ) became non-significant ( $F(1, 173) = 1.46, p = .23$ ) when stereotypic beliefs were included as a covariate (covariate effect:  $F(1, 173) = 49.60, p = .001$ ). This pattern suggests that the cigarette ad effect on intentions was mediated by changes in stereotypic beliefs.

*Differential Recall of Cigarette Advertising.* As we expected, when subjects were exposed to cigarette advertising and then to smokers (vs. nonsmokers), a higher proportion recalled the cigarette advertising (.85 vs. .66;  $\chi^2(1) = 7.97, p < .01$ ). In the other ad conditions, ad recall was unaffected by exposure to peers smoking ( $p$ 's  $> .15$ ). (See table 2.) We then focused on the cigarette ad condition and ran follow-up ANOVAs on intentions and beliefs with two bilevel factors, peer smoking condition and recall of cigarette advertising, but the interactions were not significant ( $p$ 's  $> .20$ ). Exposure to peers smoking (vs. not smoking) along with cigarette advertising enhanced smoking-related

beliefs and intentions regardless of whether the advertising was recalled ( $p$ 's  $< .05$ ).

*Valenced Thoughts.* Peer-related thoughts were more negative when peers smoked ( $M$ 's =  $-.74$  when peers smoked vs.  $.06$  when peers did not smoke,  $p < .01$ ; refer to table 3 for  $F$ -statistics). Ad condition also impacted valenced thoughts about peers ( $p < .05$ ). More important, there was an ad by peer smoking interaction ( $p < .05$ ). Exposure to antismoking (vs. control) ads resulted in less favorable thoughts, only about smokers (antismoking ad vs. control ad comparison:  $t(710) = 2.51, p < .05$ ; cigarette plus antismoking ad vs. control ad comparison:  $t(710) = 2.48, p < .05$ ). There were no ad effects on thoughts about nonsmokers, and no other pairwise comparisons were significant either ( $p$ 's  $> .20$ ). (See table 4 for means.)

*Unanticipated Results.* Most of our hypotheses were supported. However, our thought-listing measure apparently was not sensitive enough to detect that the cigarette ads caused subjects to seek out positive evidence when viewing the smokers on the videotape. Thoughts were not assessed during videotape viewing because we feared this would be too disruptive and might cause demand effects. Also, we did not measure thoughts at the front of our survey because of concerns that this might contaminate our stereotypic belief and intention measures. Therefore, thoughts about smokers were measured roughly 10 minutes after the videotapes had ended. We suspect that subjects were unable and/or unwilling to resurrect their positive thoughts about smokers at that time. Positive thoughts about smokers may not have been part of subjects' regular vocabulary and thus may have been difficult to articulate, or subjects may have felt that it was not socially desirable (politically correct) to make positive statements about smokers. After exposure to antismoking advertising, subjects did remember and report their negative thoughts about the smokers on the videotape. Apparently, these negative thoughts were part of subjects' regular vocabulary and/or were more socially desirable to report.

Another unexpected result was that the antismoking advertising did not cause subjects to become any more anti-smoking; it simply reinforced existing beliefs and intentions. Perhaps subjects searched for, but were unable to find, any-

TABLE 4  
CELL MEANS FOR MAIN DEPENDENT VARIABLES

Dependent variable	Four control ads		Four cigarette ads		Four antismoking ads		Three cigarette ads and one antismoking ad	
	No peers smoking ( <i>n</i> = 88)	Peers smoking ( <i>n</i> = 89)	No peers smoking ( <i>n</i> = 87)	Peers smoking ( <i>n</i> = 92)	No peers smoking ( <i>n</i> = 94)	Peers smoking ( <i>n</i> = 88)	No peers smoking ( <i>n</i> = 90)	Peers smoking ( <i>n</i> = 90)
Stereotypic beliefs about smokers	2.92	2.95	3.22	4.09**	3.42	3.58	3.53	3.19
Belief that smokers are rebellious (nonstereotypic)	6.65	6.41	6.57	6.07	6.23	6.43	6.39	6.44
Belief that smokers are contented (nonstereotypic)	3.94	4.32	4.53	4.67	4.54	4.59	4.73	4.26
Intentions to smoke	1.78	1.66	1.66	2.11**	1.88	1.77	1.80	1.72
Valenced thoughts about peers	-.11	-.33	.25	-.38	-.22	-1.14*	.32	-1.12*

NOTE.—Numbers indicate means. Beliefs about a teenage smoker were measured on a 1 (least favorable) to 9 (most favorable) scale. Intentions to smoke was measured on a 1 (definitely no) to 4 (definitely yes) scale. Valenced thoughts indicate positive minus negative thoughts. Asterisks denote a smoking-related (vs. control) ad effect in the designated peer smoking condition.

\* $p < .05$ .

\*\* $p < .01$ .

thing about the smokers on the videotapes that would make subjects more antismoking. Suitable evidence may not have been present. Alternatively, perhaps their antismoking beliefs were already too extreme or our antismoking ads were too weak. We relied on antismoking print ads to match the format of the cigarette print ads; antismoking television ads may have been more compelling (Pechmann and Reibling 2000a, 2000b). On the other hand, we did find that just one antismoking ad reminded subjects of their preexisting negative smoker stereotypes, caused them to generate more unfavorable thoughts about the unfamiliar smokers on the videotape (a classic priming effect), and negated the effects of three cigarette ads. Thus, the antismoking advertising was effective, at least in terms of producing these effects.

## GENERAL DISCUSSION

### Two-Step Model of Cigarette Advertising Effects

Our findings support a two-step model of cigarette advertising effects (Deighton 1984; Pechmann 2001). In the first step, the advertising primes or makes salient a positive smoker stereotype. The priming occurs automatically, even among adolescents who hold contrary beliefs and/or understand that advertisers are partisan, low-credibility sources (Hoch and Ha 1986). Adolescents need not even be aware they saw the advertising (Banaji et al. 1993; Lombardi et al. 1987). In the second step, the primed positive stereotype enhances adolescents' perceptions of peers that smoke (Romer and Jamieson 2001). Repeated exposure to cigarette ads and smokers may cause cumulative effects (Bargh et al. 1986). Mistakenly believing they have objectively examined the evidence, youth may eventually conclude that the positive stereotype is correct and that people who smoke are desirable role models. Youth who view cigarettes as a positive consumption symbol that can enhance their self-image

and self-esteem often take up smoking (Chassin et al. 1981; Coe et al. 1982; Collins et al. 1987).

Antismoking advertising can prime or bring to the forefront of memory adolescents' preexisting negative smoker stereotypes. These negative stereotypes, when salient, are apparently able to forestall cigarette advertising effects (Pechmann and Shih 1999). In fact, it seems that just one antismoking ad can offset the effect of three cigarette ads. If adolescents encounter smokers while antismoking ads are still salient in their memory, they should perceive smokers relatively negatively. If adolescents have not recently viewed cigarette and antismoking ads, our findings suggest that they should see smokers in a relatively neutral light.

Cigarette advertising may also persuade via a one-step process, that is, without working synergistically with peers. Cigarette ads may directly teach adolescents that smoking has symbolic and/or physiological benefits (Cohen 2000). Research suggests that youths who are already prosmoking are most likely to draw such conclusions (Biener and Siegel 2000; Botvin et al. 1991; Evans et al. 1995; Goldstein et al. 1986; Pierce et al. 1999). Cigarette ads that use hip spokespeople and other devices that attract attention, that increase liking and relevance, and that minimize disbelief may be especially persuasive (DiFranza et al. 1991; Fischer et al. 1991; Mazis et al. 1992). Likewise, peers who smoke may directly influence others to do so. Peers can establish prosmoking norms and friendship groups, provide cigarettes, and so forth (Ennett and Bauman 1994; Friedman et al. 1985; Graham et al. 1991; Stanton and McGee 1996).

Sometimes, though, a two-step model of persuasion can provide important new insights (Deighton 1984). In the case of smoking, perhaps the key insight is that cigarette advertising can augment the impact of peer smokers by enhancing perceptions of such individuals. Youth may mistakenly assume they have been swayed by smokers, not by ads, because smokers are the more obvious influence agent. Hence,

self-reported reasons for smoking may be misleading (Monismith et al. 1981; Ritchie 1988). Specifically, studies based on adolescent self-reports may understate the impact of cigarette ads and overstate the impact of peers on smoking initiation (Aitken and Eadie 1990; Evans et al. 1995; Pierce et al. 1998).

### Contributions to Literature on Cigarette Advertising Effects

Numerous studies have attempted to ascertain whether cigarette ads encourage underage smoking. Research that uses archival records subpoenaed during tobacco litigation indicates that cigarette marketers have previously targeted youth (Pollay 1994). For example, focus-group research was conducted with minors (Pollay and Lavack 1993), and an R. J. Reynolds Tobacco CEO indicated that an important company goal was to market to 14–18 year olds (Cohen 2000). Surveys indicate that the controversial Joe Camel cartoon ads successfully reached youth and increased Camel's share of the underage market (DiFranza et al. 1991; Mizerski 1995; Pierce et al. 1991). It has also been reported that ads for cigarette brands that are popular with youth are selectively placed in magazines with large youth readerships (King et al. 1998; also Albright et al. 1988; Ammerman and Nolden 1995). One study reported that 90% of youths felt cigarette ads made smoking "look enjoyable" (Monismith et al. 1981, p. 221; also Altman et al. 1987; Basil et al. 1991).

A time series study concluded that adolescents are three times as responsive to cigarette brand advertising as adults (Pollay et al. 1996), though adults are also responsive (Holak and Tang 1990). A metaanalysis found that, in general, increases in cigarette advertising expenditures enhance cigarette consumption (Andrews and Franke 1991; also McGuinness and Cowling 1975; Radfar 1985). In the United States, increases in adolescent smoking prevalence appear to have coincided with the onset of major cigarette advertising initiatives (Pierce and Gilpin 1995; Pierce, Lee, and Gilpin 1994). Abroad, adolescent smoking prevalences have been shown to decline after comprehensive restrictions on cigarette advertising have been imposed (Laugesen and Meads 1991; Rimpelä, Aarø, and Rimpelä 1993).

But none of these studies were experiments, which are considered to be the "gold standard" for assessing causality (Cook and Campbell 1979). Hence, they cannot definitively rule out the possibility of reverse causality (e.g., perhaps increases in product sales slightly preceded increases in advertising). Also, many studies only show that cigarette advertising affects brand choices (secondary demand) and do not address whether it impacts initial decisions to consume the product (primary demand). Our experiment indicates that cigarette advertising seems to impact primary demand by enhancing adolescents' beliefs about smokers and intentions to smoke, even among those who initially report antismoking beliefs and intentions.

### Limitations and Future Research Directions

One limitation of this study is that we do not show a direct link between exposure to cigarette ads and adolescent smoking behavior. To show this direct link, we would likely have to expose adolescents to cigarette ads for a prolonged period of time. In our view, this type of research would be unethical. Fortunately, past investigations have shown that the measures we used to assess subjects' smoking-related beliefs and intentions are valid leading indicators of their likely smoking behaviors (Aitken and Eadie 1990; Chassin et al. 1981; Dinh et al. 1995; Pierce et al. 1995).

Another limitation of our work is that videotapes were used as proxies for the bona fide experience of seeing cigarette ads, antismoking ads, and peers who are smoking. In our opinion, both the ads and peers on the videotapes were less prominent than they would be in real life, where they would be encountered more frequently and would be more vivid. A rival view is that the peers were less prominent in our videotapes than in real life but that the ads were more prominent. However, we do not think the peers in our videotapes, who were strangers to subjects, would have been any more prominent in real life. Also, if our advertising had been overly prominent, and subjects had been aware that we were trying to influence them with advertising, we likely would have seen reactance or contrast effects (Herr 1989); instead we found the predicted assimilation effects.

A possible concern with our mixed ad condition is that the cigarette advertising could conceivably have produced null effects because one fewer cigarette ad was shown rather than because one antismoking ad was shown. However, recall of cigarette ads was virtually identical regardless of whether subjects viewed three or four such ads (86% vs. 85%). Also, the one antismoking ad elicited unfavorable thoughts about the smokers on the videotape, consistent with our theorizing. It is possible that the antismoking ad was especially impactful because it benefited from a recency effect (Haugtvedt and Wegener 1994). The antismoking ad was shown after the cigarette ads and was thus temporally closer to the scene showing peers smoking. This issue may warrant further study.

In future research, we would like to measure smoker stereotypes with implicit association tests (Greenwald, McGhee, and Schwartz 1998). A stereotype's strength and valence can be assessed according to the speed with which word discrimination tasks are performed. Implicit association tests reveal socially undesirable stereotypes that subjects may be unwilling to express in surveys (Banaji and Greenwald 1995; Greenwald and Banaji 1995); such taboo stereotypes may include positive smoker stereotypes. We would like to reliably identify youth with positive smoker stereotypes to see if they are directly influenced by cigarette ads. We also wish to identify adolescents with extremely negative smoker stereotypes to determine whether cigarette ads might possibly produce contrast (antismoking) effects rather than assimilation (prosmoking) effects. These issues seem to be important both theoretically and substantively, and to our

knowledge, few psychologists or consumer behaviorists are studying them.

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