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# Sexual Imagery in Cigarette Advertising Before and After the Master Settlement Agreement

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This study examines how the sexual imagery in cigarette magazine advertisements changed as a result of the 1998 Master Settlement Agreement (MSA). After conducting a content analysis of 657 unduplicated cigarette ads from 1994 to 2003, our results revealed that cigarette advertisements featuring suggestive/partially clad female models increased significantly from the pre-MSA period (16.0%) to the post-MSA period (24.9%). In addition, we provide empirical evidence that there was an overall increase in sexually explicit cigarette advertising after the MSA. Several implications for policymakers are discussed in detail.

The ever-growing concern with cigarette smoking and its detrimental effects on public health has stimulated ongoing debate about advertising regulation for tobacco products. Although some argue that the effects of cigarette advertising are limited to persuading people either to start smoking or to quit smoking (e.g., Moschis, 1989), a substantial body of research has suggested that cigarette advertising plays an important role in influencing the perceptions, attitudes, and smoking behavior of people, particularly adolescents (Beltramini & Bridge, 2001; Elders et al., 1994; Pollay, 1986). In response to the need for tobacco control, the 1998 Master Settlement Agreement (MSA) between the four major tobacco manufacturers (Phillip Morris, R. J. Reynolds, Lorillard, and Brown & Williamson) and the attorneys general of 46 states restricted advertising and promotion practices for tobacco products (National Association of Attorneys General, 1998). The MSA also included several provisions intended to limit youth exposure to cigarette advertising, such as a ban on billboard and transit advertising and size limits on outdoor advertisements. However, the MSA did not provide specific guidelines for the execution of

cigarette advertising techniques. In the face of these MSA restrictions on direct cigarette advertising, tobacco manufacturers put more effort into developing visual imagery strategies (Sung & Hennink-Kaminski, 2008).

Unsurprisingly, cigarette advertisements often use symbolic associations with visual images, such as images and themes of exciting lifestyles, masculinity and femininity, success, and sophistication (Cohen, 2000). According to Warner (1985), the visual imagery of vibrant, physically fit, socially dynamic, and sexy people in cigarette ads reflects an attempt by the tobacco industry to separate cigarette smoking from harmful health effects. King et al. (1991) reported that cigarette magazine advertisements published after the implementation of the broadcast ban grew larger, more photographic, more colorful, and more visually dominant than cigarette ads published before the ban. The potent sexual imagery in cigarette advertising can be seen as an effective way in which tobacco companies can attempt to attract young people and affect their smoking behavior while circumventing the provisions of the MSA for tobacco control.

Despite the possible shifts in the smoking imagery in the aftermath of the MSA, little attention has been given to investigating how sexual imagery in cigarette advertising potentially changed. Given that cigarette smoking often has pertained to sexual allure (Sussman, 2005), and that the use of sexual content in cigarette advertising can contribute to

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encouraging adolescents to experiment with smoking and eventually become established smokers (Sansores et al., 2002), a focused examination of these dynamics seems to be in order.

The primary purpose of this study is to examine how sexual imagery in cigarette advertising changed as a result of the MSA restrictions on cigarette advertising. By systematically comparing the sexual depictions in cigarette advertising pre- and post-MSA, the current research is an important step in documenting how tobacco marketers shifted executional focus to luring audiences to cigarettes with sexual imagery. The results of this study inform public policy implications for tobacco control and stimulate critical discussion associated with sexual portrayals in cigarette advertising.

## BACKGROUND

### Lessons from the Master Settlement Agreement

By signing the MSA in November 1998, tobacco companies were exempted from participating states' individual lawsuits regarding harm caused by tobacco use in exchange for paying a total of \$206 billion over 25 years to the states and voluntarily restricting cigarette advertising and promotions (National Association of Attorneys General, 1998). The MSA broadly forbade targeting youth, with the specific language that no participating manufacturer may take any action, directly or indirectly, to target youth (National Association of Attorneys General, 1998). The MSA had both concrete (e.g., providing compensation for states' Medicaid expenses associated with smoking-related diseases) and aspirational (e.g., reducing public smoking rates in the United States) aspects.

Central to the MSA are the restrictions on cigarette advertising and marketing practices targeted at youthful audiences. Specifically, the MSA places restrictions on the use of cartoon characters (e.g., Joe Camel) with comically exaggerated features, or attribution of human characteristics or unnatural and extrahuman abilities to animals, plants, objects, or any entity in the advertising, sales promotion, packaging or labeling of tobacco products (for a review see Pierce & Gilpin, 2004). After implementation of the MSA provisions, the tobacco companies were required to limit their outdoor advertising in malls, arenas, stadiums, video arcades, and on vehicles with transit advertisements. Tobacco company sponsorship of concerts, sports events, or other cultural events was also restricted. Furthermore, product placement in the media and any tobacco merchandise with a brand name were banned (National Association of Attorneys General, 1998).

In an effort to assess the effects of the MSA on cigarette advertising and marketing activity changes, several studies have been conducted to determine whether tobacco companies altered their advertising and marketing expenditures

and to examine the exposure of youth to cigarette advertisements post-MSA (e.g., Celebucki & Diskin, 2002; King & Siegel, 2001; Hamilton et al., 2002; Krugman, Morrison, & Sung, 2006; Pierce & Gilpin, 2004). To illustrate, Pierce and Gilpin (2004) found that the tobacco industry expenditures for advertising and promotions increased 96% between 1995 and 2001, with substantial increases in 1998 and 1999. Krugman, Morrison, and Sung (2006) reported that the advertising expenditures in youth-oriented magazines for three leading tobacco brands (Camel, Marlboro, and Newport) increased during the 1993–2002 period, despite a precipitous drop in such advertising at the end of the period.

With regard to exposure studies, King and Siegel (2001) found that cigarette brands popular among young people are more likely than adult brands to be advertised in magazines with high youth readership, and the overall level of exposure to cigarette advertising in magazines remained high after the MSA, with the authors asserting that the MSA appeared to have had little impact on cigarette advertising in magazines. Similarly, Chung et al. (2002) examined magazine readership and cigarette advertising in U.S. magazines from 1997 to 2000 to track changes before and after the MSA, suggesting that three manufacturers (Philip Morris, R. J. Reynolds, and Brown & Williamson) failed to comply with the MSA's youth-targeting ban and selectively increased their advertising to youth.

Recently, Sung and Hennink-Kaminski (2008) examined changes in the visual imagery of cigarette magazine advertising before and after the MSA, finding that human models appear in the majority of ads (74.4%) over the two time periods, but that use of certain advertising themes had changed. For instance, in magazines with high youth readership, cigarette advertising increasingly featured erotic/romantic themes. However, the authors only tangentially consider sexual images in cigarette ads, as it is not the main thrust of their work. As such, the question in need of more comprehensive research is to what extent sexual imagery in cigarette ads varies over different periods of time (pre- and post-MSA). In order to address this question, the current research focuses systematically on changes in the sexual imagery of cigarette ads over time by incorporating multiple facets of sexual imagery that have not been investigated in past examinations of cigarette advertising.

### Sex in Cigarette Advertising

Smoking continues to echo symbolic meanings that are closely tied to sexuality, as the portrayal of smoking associated with sex has appeared in a variety of popular media. For example, Escamilla, Cardock, and Kawachi (2000) found that the smoking portrayal of females in Hollywood movies pertains to sexual affairs. According to Ribisl, Lee, Henriksen, and Haladjian (2003), one in five smoking culture and lifestyle websites contained references to sexuality,

especially “smoking fetishism” (e.g., images with provocative women smoking while wearing spiked heels and black latex or leather outfits), and all of the visual images with nudity depicted smoking.

Sexual portrayals are particularly salient in cigarette advertising. Sexual imagery has been present in cigarette advertising for hundreds of years; for instance, in the 1800s cigarette companies’ advertisements and labels often featured nude females in an attempt to attract male consumers (Reichert, 2003a). Over recent decades, tobacco marketers have used sexual imagery for their advertisements in order to appeal to consumers who approve of tobacco use. For example, Schooler, Basil, and Altman (1996) reported that sex appeal (30%) is the most prevalent attractiveness cue on tobacco billboard advertisements, suggesting that sexuality is a common thematic portrayal. Given the prevalence of sexual content in cigarette advertising, tobacco marketers may believe that people will be attracted to cigarette advertisements featuring sexual portrayals.

Consistent with this reasoning, the imagery or symbolic association of smoking with sexuality placed in cigarette advertising can be applied to targeting youth. A considerable amount of research has provided strong evidence that the portrayal of smoking associated with sexuality in the media and advertising can influence the smoking process in adolescents (Brown & Witherspoon, 2002; Charlesworth & Glantz, 2005; Sussman, 2005). According to Sansores et al. (2002), cigarette advertising featuring sexual content is one of the most meaningful factors that affect the perceptions, attitudes, and smoking behavior of youth. When exposed to sexual or erotic content of cigarette advertising, adolescents may view smoking behavior as desirable, rebellious, and sexy.

Given the existing demonstration that sexual imagery in advertising may indirectly influence audiences by making such images appear as a normal part of the media landscape (Reichert, Childers, & Reid, *in press*), a closer look at the theoretical underpinning explaining why we should be concerned about sexually explicit cigarette ads seems warranted.

### Theoretical Framework

Social cognitive theory provides a strong theoretical basis for why sex in cigarette advertising should matter to policymakers and other stakeholders, and it has been frequently used in previous research as a theoretical framework through which to assess the depictions of sexual portrayal in the media and advertising (e.g., Kim, Paek, & Lynn, 2010; Ribisl et al., 2003). A basic tenet of social cognitive theory is that human behavior can be shaped and controlled by social systems. In particular, social cognitive theory provides a basis for acknowledging the importance of observing and modeling the behaviors, attitudes, and emotional reactions of others (Baek & Yu, 2009; Bandura, 1989). Observational

learning indicates an individual’s belief on the basis of observing others’ behavior or physical results (Bandura, 2001). In other words, people can acquire knowledge, emotional reactions, and behavioral patterns by observing others’ experiences, thoughts, or physical changes. For example, children may observe their parents smoking cigarettes. If they do not see any harmful effects, they are more likely to imitate and adopt these smoking behaviors themselves (Baek & Yu, 2009).

Given that sexual imagery in cigarette advertising is viewed as vivid stimuli, it is possible that observational learning is reinforced by visual imagery of sexually provocative models presented in cigarette advertising because vivid images of sexuality come to mind more easily. Nisbett and Ross (1980) stated that vivid stimuli are “emotionally interesting, concrete and imagery-provoking, and proximate in a sensory, temporal or spatial way” (p. 45). Vivid information could activate more information processing, and thus is potentially more memorable (Nisbett & Ross, 1980; Paek et al., *in press*).

Most importantly, sexual portrayals in cigarette advertising may serve as potentially powerful modeling influences for youthful smoking behavior. Several studies suggest that youth tend to perceive that smoking behavior conveys socially desirable attributes, such as being sexually attractive, sociable, and cool, and thus such behavior has been learned from firsthand observation of peers, siblings, and parents who smoke, as well as the mass media (Bauman et al., 1984; Chassin, Presson, & Sherman, 1990; see Sung & Hennink-Kaminski, 2008, for a review). For example, Sussman (2005) pointed out that sexuality of smoking has been a social image cultivated by the tobacco industry in advertisements through the use of attractive celebrities as role models. As such, cigarette advertising may play an important socializing role among the young in shaping views of what they judge as cool and attractive regarding smoking (Bandura, 2001; Paek et al., *in press*).

An additional theoretical framework that serves as a basis for understanding how people respond to sexually explicit ads and analyzing what actually constitutes sexual imagery in cigarette advertising is the sexual behavior sequence (SBS) model. The SBS model (Byrne, 1977), which has been used to explain and predict the sequence of sexual responses to sexual stimuli, posits that erotic stimuli should be perceived and interpreted as sexual before it can evoke a sexual response (Fisher, 1986). As such, the focus of the SBS model is on understanding sexual stimuli that may evoke the arousal, affective, cognitive, and behavioral responses (Fisher & Barak, 2001). In an advertising context, Reichert and Ramirez (2000) examined what consumers perceive as sexy in advertising using the SBS model as a theoretical framework. They revealed that there are five characteristics of sexually oriented appeals in advertising: (1) physical features, (2) behavior/movement, (3) contextual features, (4) intimacy between models, and (5) voyeurism/fantasy.

As Reichert and Ramirez (2000) suggested, the concept of sex in advertising should be defined in terms of a broad category of appeal perceived as sexual by the audiences.

## RESEARCH QUESTIONS

As previously discussed, sexuality and advertising practices for tobacco products are virtually inseparable. Conventional wisdom suggests that cigarettes are among a group of products with sex-based connotations (Reichert, Childers, & Reid, in press; Reid & Soley, 1983). Cigarette advertising often conveys that young women who smoke have high sex appeal. Prior research has asserted that several of the most youth-popular brands have been consistently associated with images of femininity and sex appeal (National Cancer Institute, 2008). Pollay (1995) shows many examples of cigarette ads containing sexual imagery, symbolism, and innuendo. For example, an advertisement for Benson & Hedges featured a man and woman sharing pajamas, with the copy "He likes the bottoms . . . She likes the tops . . . But there's one thing they agree on. Benson & Hedges." During the 2000s, magazine advertisements for Camel's "Pleasure to Burn" campaign depicted a partially clad female model wearing provocative fetish clothing with gauze stockings and black-colored leather gloves while holding a cigarette pipe in her mouth.

Extant literature has documented that the use of sexual images in cigarette advertising is effective. For instance, Reid and Soley (1983) have suggested that cigarettes are a sexually relevant product category, and sexual images associated with a decorative female model in these ads can affect magazine ad readership. Along the line that the illustrations or visuals are the most likely place for sexualized elements in advertising (Soley & Kurzbard, 1986), cigarette advertising often uses both implicit and explicit visual imagery strategies that associate smoking portrayals with sexuality.

In a review of research on sex in advertising, sexual imagery can be broadly defined with respect to sexual explicitness, nudity, and physical contact (LaTour & Henthorne, 1993; Reichert, 2003b; Reichert et al., 1999). First and foremost, sexual explicitness is conceptualized as manifest sexual imagery that goes beyond sexual embeds at the subconscious level. It often embraces sexually provocative models and intimate relations between models, alluding to the sexual benefits of using the advertised brand (Putrevu, 2008; Reichert & Carpenter, 2004). On the basis of prior research on sex in advertising (Reichert, 2002; Reichert & Lambiase, 2003; Reichert & Ramirez, 2000), it appears that four types of sexual explicitness include sexual attractiveness, sexual behavior, voyeurism, and fantasy. Sexual attractiveness implies that the model would be perceived as being sexually attractive in light of facial beauty, physique, and complexion (Reichert & Lambiase, 2003). Sexual behavior is defined in terms of individual

and interpersonal interaction, including flirting, eye contact, and posture, as well as hugging, kissing, and more intimate forms of sexual activity (Reichert, 2002). Voyeurism represents the model observing other sexually provocative models in the ad (Reichert & Ramirez, 2000). Fantasy represents any daydreaming, which includes the reconstruction of previous sexual experiences or the creation of sexual arousal (Rokach, 1990).

On the other hand, nudity refers to the amount and style of clothing being worn and the amount of skin shown in advertising (Nelson & Paek, 2005, 2008; Reichert et al., 1999; Reichert, 2003b). The level of nudity can be categorized by progressive stages of undress (e.g., demure, suggestive, partially-clad, or nude) (Reichert, 2003b; Reichert et al., 1999). For example, suggestive dress would include depictions of decorative models wearing open blouses with partially exposed cleavage, tight-fitting clothing that accentuates the body, or mini-skirts. Partially clad dress is often represented by images of decorative models wearing underwear or bathing suits. Nudity would include side and back shots of the models with displays of full or partial frontal nudity. Reichert (2003b) asserted that the majority of "sex in advertising" research has deemed the degree of nudity as a form of sexual content. Finally, the level of physical contact between heterosexual couples represents a common form of sexual imagery in mainstream advertising. Advertisers have the option of depicting models having limited or no contact with one another, or engaging in what advertisement audiences would view as progressively more provocative contact, culminating in the implication that the models are engaging in sexual activity.

Taking into consideration the key issues of MSA restrictions on advertising practices, the following set of research questions is put forth to see what changes, if any, have occurred regarding the sexual imagery of cigarette advertising before and after the MSA.

- RQ1: Have the characteristics of sexually explicit cigarette advertising changed over the two time periods: pre- and post-MSA?
- RQ2: Have the degrees of nudity (female vs. male models) in cigarette advertising changed over the two time periods: pre- and post-MSA?
- RQ3: Have the sexual portrayals of physical contact in cigarette advertising changed over the two time periods: pre- and post-MSA?

## METHOD

### Sample

Drawing upon a master database of cigarette ads prepared for the U.S. Department of Justice in its litigation against the major tobacco companies, this study conducted

a content analysis of cigarette advertisements from three popular magazines, *Cosmopolitan* (women-targeted), *Sports Illustrated* (men-targeted), and *Rolling Stone* (both), over a 10-year period (pre-MSA, 1994–1998, and post-MSA, 1999–2003). According to a syndicated resource for magazine readership data from Mediamark Research, Inc., the three magazines have been published for the entire 10-year period, have a high percentage of youth and adult readerships (see <http://www.mediamark.com>), and fit into the proposed Food and Drug Administration (FDA) standard of what constitutes targeting youth magazines (Krugman, Morrison, & Sung, 2006).

The sample was selected from the universe of cigarette ads ( $n = 1,000$ ) representing a stratified sample, in terms of both tobacco brand and each smoking era (pre- and post-MSA). Duplicate ads within and across magazines were eliminated, resulting in a total of 657 unique cigarette ads ( $n = 400$  from pre-MSA and  $n = 257$  from post-MSA).

It is important to note that there has been a general decline in the number of cigarette ads published during the post-MSA period as compared to the pre-MSA period. Two factors may help account for this pattern. First, it pertains to the MSA provisions that impacted the reduction of tobacco industry expenditures for magazine advertising. Although several studies confirmed that the total amount spent on cigarette advertising and promotions increased substantially, particularly in the first year after the MSA (1998–1999), the overall advertising expenditures in magazines have declined somewhat since 2001 (e.g., Chung et al., 2002; King & Siegel, 2001). For example, Krugman, Morrison, and Sung (2006) reported that ad expenditures in youth-oriented magazines for three leading brands (Camel, Marlboro, and Newport) were \$80.0 million in 1999, \$74.4 million in 2000, \$19.3 million in 2001, and \$0.6 million in 2002. Based on this evidence, ad spending levels have dramatically decreased since 2001.

Second, public pressure has contributed to the decline in the number of cigarette magazine ads during the post-MSA period relative to the pre-MSA period. Hamilton et al. (2002) found that major tobacco companies initially increased expenditures and then substantially decreased expenditures from 1998 through 2001, suggesting that the decrease may be attributed to public pressure. Along this line, we believe that public pressure played an important role in reducing the prevalence of cigarette magazine advertising after the MSA was implemented.

### Coding Scheme

The coding scheme was adapted from previous research on sex in advertising (Reichert & Carpenter, 2004; Reichert & Lambiase, 2003; Reichert & Ramirez, 2000; Soley & Reid, 1988). A set of coding categories was designed to record sexual images in cigarette advertising, including

sexual explicitness, nudity, and physical contact. First, the characteristics of sexual explicitness were constructed with four variables measured with a binary scale (“1” = yes and “0” = no): sexual attractiveness, sexual behavior, voyeurism, and fantasy (see Appendix). The four characteristics of sexually explicit cigarette advertising were summed to create the sexual explicitness index score.

Furthermore, nudity was categorized as demure, suggestive/partially clad, and nude (Reichert & Carpenter, 2004). Since the types of nudity are not mutually exclusive, some ads may be included in more than one model dress. Therefore, the coding system allowed ads to be coded into multiple categories regarding the degree of nudity by measuring with a binary scale (“1” = yes and “0” = no). When at least one female and one male model were present in an ad, the level of physical contact between human models was classified into one of four ordinal categories adopted from Soley and Reid (1988): (1) no contact, (2) simple contact, (3) intimate contact, and (4) very intimate contact. The operational definitions of sex-related variables are presented in Table 1.

### Coding Procedure

Four graduate students majoring in advertising and public relations coded the cigarette advertisements as part of a course project for a doctoral seminar. They were provided with a codebook containing operational definitions of each variable, and worked independently. A three-hour training session over a 10-week period was conducted. Prior to the main analysis, this study conducted a pilot study where all coders analyzed 40 ads not included in the final sample ads in order to determine whether the proposed coding scheme and operational definitions were precise and to establish intercoder reliability. Based on results of the pilot testing, troublesome variables were either eliminated or revised and the coding manuals were further developed. A series of in-person training sessions and group discussions was then conducted. Due to the large size of the sample, the four coders were placed into two groups and each pair was assigned to code 100 overlapping ads for calculating intercoder reliability. Each of them also coded 200 unique ads in the main study.

Intercoder reliability was determined using the Perreault and Leigh (1989) Index (P/L Index) for each of the two-person groups. This method is considered to be appropriate when there are only two coders with nominal scales and is known to be a rigorous measure of reliability, considering change agreements (Lombard, Snyder-Duch, & Bracken, 2002; Paek, 2005; Rust & Cooil, 1994). The average intercoder reliability coefficient was .94. All reliability coefficients ranging from .86 to 1.00 were satisfactory, falling above the acceptable point (higher than .75) (Rust & Cooil, 1994).

TABLE 1  
Operational Definitions

Sexual explicitness	
1 Sexual attractiveness	When the model is physically and sexually attractive through sexual gazing (e.g., engaging the viewer with seductive eye contact with raised eyes or head up) or body shape (e.g., the female model has a thin waist with large hips and breasts)
2 Sexual behavior	When the model would be more likely to participate in sexual activity (e.g., kissing, petting, engaging sexual intercourse) while smoking cigarettes and/or have more enjoyment from encounters smoking (e.g., flirting, dancing)
3 Voyeurism	Someone watching someone else in the cigarette ads (e.g., The man watching a woman who smokes)
4 Fantasy	Reference to any daydreaming that includes erotica and that is sexually stimulating. (e.g., the model engaging in sexual imagination/activity in unusual situations.
The degree of nudity	
5 Demure	When the model is wearing everyday attire, including walking shorts and tennis outfits, but excluding mini-skirts or evening gowns that expose cleavage
6 Suggestive/ Partially clad	When the model is wearing a mini-skirt, short shorts, muscle shirt, full-length lingerie (unless see-through) or other dress/shirt that exposes cleavage or chests, and "hiked" skirts that expose thighs.
7 Nudity	When the model is depicted with no clothing or silhouettes and wearing translucent under garments and lingerie
Physical contact	
8 No contact	Depicted no touching although female and male models are presented together.
9 Simple contact	Depicted nonsexual interpersonal touching in the ad (e.g., holding hands).
10 Intimate contact	Depicted supportive/affectionate displays in the ad (e.g., kissing or hugging).
11 Very intimate contact	Depicted typical sexual intercourse or sexual behaviors in the ad (e.g., sexual intercourse).

*Note.* Sexual explicitness and the degree of nudity were measured with dichotomous categories (presence = 1 and absence = 0). However, when at least one female and one male model were present in an ad, the level of physical contact was classified into one of four ordinal categories.

## RESULTS

### RQ1. Changes in the Characteristics of Sexually Explicit Cigarette Ads Pre- and Post-MSA

The first research question was asked to determine whether the characteristics of sexually explicit cigarette ads had changed over the 10-year period with respect to sexual attractiveness, sexual behavior, voyeurism, and fantasy. Of the 657 unduplicated ads, 21.8% ( $n = 143$ ) contained visual sexual imagery. As shown in Table 2, sexually explicit cigarette ads significantly increased from 18.8%

in the pre-MSA period to 26.5% in the post-MSA period [ $\chi^2(1) = 5.46, p \leq .05$ ; Fisher's exact test = .02].<sup>1</sup> Within the sexually explicit ads during the pre-MSA era, sexual attractiveness (72.0%) represented the most common characteristic of sexually explicit cigarette ads, followed by sexual behavior (18.7%), fantasy (12.0%), and voyeurism (8.0%). Sexually explicit cigarette ads featuring the sexual attractiveness of the models also appeared the most frequently during the post-MSA era (89.7%), followed by sexual behavior (19.1%), voyeurism (16.2%), and fantasy (11.8%). These results clearly show that (1) the use of sexual themes increased from pre-MSA to post-MSA time periods, (2) sexual attractiveness is consistently the most dominant characterization of sexually explicit cigarette ads over time, and (3) the use of sexual attractiveness was significantly more prevalent in the post-MSA time period versus pre-MSA [ $\chi^2(1) = 7.10, p \leq .05$ ; Fisher's exact test = .01].

In an effort to ascertain whether the overall pattern of changes in the characterization of sexually explicit cigarette ads holds true, an index score was created by summing the four variables (sexual attractiveness, sexual behavior, voyeurism, and fantasy). An independent *t*-test was conducted to examine the existence of mean difference in the index score. It was found that the mean of index score from the post-MSA era ( $M = 1.37, SD = .64$ ) was significantly higher than that from the pre-MSA era ( $M = 1.11; SD = .45$ ) [ $t(141) = 2.82, p \leq .05$ ]. Therefore, the findings of this research confirmed evidence supporting that there was an overall increase in sexually explicit cigarette ads after the MSA.

### RQ2. Changes in the Degrees of Nudity in Cigarette Ads Pre- and Post-MSA

The second research question was asked to investigate what changes have occurred in the degree of nudity placed in cigarette ads before and after the MSA. Table 3 displays the percentage and frequency of nudity of female and male models across the two eras. The results revealed that while there was no change in the prevalence of cigarette ads featuring female models with either demure or nude dress over time, cigarette ads featuring suggestive/partially clad female models increased significantly from the pre-MSA period (16.0%) to the post-MSA period (24.9%) [ $\chi^2(1) = 7.91, p \leq .01$ ; Fisher's exact test = .006]. Meanwhile, the prevalence of cigarette ads depicting suggestive/partially clad male models did not change after the MSA [ $\chi^2(1) = .28, p = n.s.$ ]. Interestingly, cigarette ads featuring demurely

<sup>1</sup>We used Fisher exact test for determining statistical significance. Fisher's exact test is known to be a more appropriate alternative to the chi-square test, especially when the sample size is small and the two-by-two tables are highly unbalanced (Fleiss, 1981), which was true in our study.

TABLE 2  
Characteristics of Sexually Explicit Cigarette Ads Before and After the MSA

	Pre-MSA (n = 400)		Post-MSA (n = 257)		$\chi^2$	df	Fisher Exact Test
	Percent	Frequency	Percent	Frequency			
Sexually explicit ads <sup>a</sup>	18.8%	75	26.5%	68	5.46	1	.02*
Sexual attractiveness <sup>b</sup>	72.0%	54	89.7%	61	7.100	1	.01*
Sexual behavior <sup>b</sup>	18.7%	14	19.1%	13	.005	1	1.00
Voyeurism <sup>b</sup>	8.0%	6	16.2%	11	2.276	1	.19
Fantasy <sup>b</sup>	12.0%	9	11.8%	8	.002	1	1.00
Base total		83		93			

Sexual Explicitness Index Score			
Year	n	Mean	SD
Pre-MSA (1994–1998)	75	1.11	.45
Post-MSA (1999–2003)	68	1.37	.64

Mean Difference Before and After the MSA in Sexual Explicitness Index Score				
MSA Era	Mean Differences	df	t-Value	p-Value
Pre vs. post-MSA	.26	141	2.82*	.005

Note. Sexual explicitness index score is measured by summing the four types of sex-related variables (sexual attractiveness + sexual behavior + voyeurism + fantasy).

<sup>a</sup>Percentage is calculated based on the total number of unduplicated ads ( $n = 400$  from pre-MSA and  $n = 257$  from post-MSA).

<sup>b</sup>Percentage is calculated based on the total number of unduplicated ads within sexually explicit ads ( $n = 75$  from pre-MSA and  $n = 68$  from post-MSA).

The base total is larger than the actual number of ads analyzed because multiple types of sexually explicit imagery could appear in the same ad. Therefore, percentages add to over 100.

\*Statistically significant at .05 level.

TABLE 3  
Degrees of Nudity of Female and Male Models

	Pre-MSA (n = 400)		Post-MSA (n = 257)		$\chi^2$	df	Fisher Exact Test
	Percent	Frequency	Percent	Frequency			
Female model							
Demure	27.75%	111	22.96%	59	1.87	1	.201
Suggestive/partially clad	16.00%	64	24.90%	64	7.91	1	.006**
Nude	0.25%	1	0%	0	.64	1	1.000
Male model							
Demure	55.50%	222	47.00%	122	4.04	1	.046*
Suggestive/partially clad	5.25%	21	6.23%	16	.28	1	.607
Nude	0%	0	0%	0	—	—	—
Base total		419		261			

Note. The base total is larger than the actual number of ads analyzed because multiple types of model dress could appear in the same ad. Therefore, percentages add to over 100.

\*Statistically significant at .05 level.

\*\*Statistically significant at .01 level.

ressed male models decreased significantly after the MSA [ $\chi^2(1) = 4.04, p \leq .05$ ; Fisher's exact test = .046].

### RQ3. Changes in the Sexual Portrayal of Physical Contact in Cigarette Ads Pre- and Post-MSA

To determine whether there was a change in the sexual portrayal of physical contact featured in cigarette ads over the two time periods, Spearman's rank-order correlation was used because the level of physical contact between female and male models was measured with an ordinal scale and Spearman's correlation coefficient ( $\rho$ ) provides an indication of directionality (Reichert & Carpenter, 2004;

Siegel & Castellan, 1988). The findings indicated that there was no relationship between MSA period and physical contact [ $r(657) = .025, p = .525$ ]. Clearly, sexual portrayal of physical contact between women and men showed little change in cigarette magazine advertisements before and after the MSA. Table 4 presents the percentage and frequency of physical contact pre- and post-MSA.

## DISCUSSION

The overarching objective of this study was to assess the extent to which sexual imagery in cigarette ads changed



TABLE 4  
Sexual Portrayal of Physical Contact Before and After the MSA

	Pre-MSA (n = 400)		Post-MSA (n = 257)		Spearman's Rho	p-Value
	Percent	Frequency	Percent	Frequency		
No contact	52.1%	53	53.4%	39	.025	.525
Simple contact	23.5%	24	26.0%	19		
Intimate contact	23.5%	24	20.6%	15		
Very intimate contact	0.9%	1	0%	0		
Base total		102		73		

Note. The percentages equal 100 because they were measured with an ordinal scale (1 = no contact, 2 = simple contact, 3 = intimate contact, 4 = very intimate contact).

over time, pre- and post-MSA. Overall, we found that there has been a significant increase in the proportion of sexual imagery in cigarette ads since the MSA. From a public health standpoint, the results of this study have important implications for policymakers charged with tobacco control. Most importantly, our findings can provide policy officials with more empirically informed arguments and factual statements about the presence and prevalence of sexual imagery in cigarette advertising after the MSA. If linking cigarette smoking with sex-based connotations is indeed an undesirable outcome, the post-MSA trend regarding the use of sexual imagery in tobacco advertising is quite troublesome. Armed with findings from the current research, we suggest that more specific and stringent policies for cigarette advertising depicting eroticized smoking images should be required.

Of particular concern in the context of cigarette advertising is the image of sexual content to youthful viewers. In theory, the Master Settlement Agreement was designed to limit the tobacco industry's ability to target youths. The key rationale for implementing a comprehensive restriction on cigarette advertising that attempts to evoke sexual imagery would be the role of decorative models depicted in tobacco advertisements as having sex appeal.

Concerns regarding the prevalence of sexual portrayals in cigarette advertising are in accordance with social cognitive theory. Research on social cognitive theory has claimed that people may not immediately imitate modeled behavior, but might store these modeled behaviors as "cognitive scripts" for later retrieval and use in a real life situation (Bailey, 2006; Green, 1994; Larson, 2001). In this sense, young people who are exposed to the sexual portrayals of human models in cigarette ads may rely on these ads as a source of observational learning for smoking behavior.

This use of models, especially women, as sexual objects or decoration in advertising is not a new phenomenon, as for three decades researchers have documented this advertising practice overall (e.g., Sexton and Haberman, 1974; Venkatesan & Losco, 1975) and particularly in the cigarette industry (Sexton & Haberman, 1974). When it comes to the restriction on image advertising imposed by the MSA, the agreement bans only cartoon images in cigarette advertising (Petty, 1999). As a result, it implicitly allows cigarette

advertisements to use the imagery of decorative models as attention-getting objects, and our findings demonstrate that they appear to have wholeheartedly embraced this opportunity.

Thus, most importantly, this study provides empirical support to suggest that the tobacco companies continued to use—and even substantially increased—the visual imagery association of sexuality with smoking in cigarette advertising under the more severe advertising regulations. In totality, our findings suggest that, contrary to the intent of the MSA, tobacco companies increasingly employed techniques (sexual-based messaging, increased levels of suggestive clothing and erotic themes) that have been suggested to particularly appeal to youths. Given that research suggests that the use of sexual images in cigarette advertising is effective (e.g., Reid & Soley, 1983), it is not surprising that the tobacco companies, when limited by the MSA, chose to increasingly leverage these types of ads; further, it is likely that this was not simply happenstance but likely a strategic decision on the part of cigarette advertisers. Accordingly, policymakers need to consider the overall trends of sexual imagery in cigarette advertising before and after the MSA if they take action for limiting specific types of imagery in cigarette advertising.

A long-standing debate in the advertising community pertains to whether advertising shapes reality or vice versa (Gilly, 1988; Lundstrom & Sciglimpaglia, 1977). Proponents of the "reflective" view (e.g., Holbrook, 1987) argue that advertising merely casts a mirror on society, capturing a record of reality, whereas their opponents (e.g., Pollay, 1986) contend that advertising exerts an influence on the values of a society. Extant research suggests that the images reinforced by the tobacco industry would appeal to youth, and that youth tend to perceive that smoking behavior as being sexually attractive (Sussman, 2005). Whether we have a case of tobacco advertisements reflecting a more sexual society, or consciously seeking to increase the connotation between sexuality and smoking, the implication is that these advertisements, based on the results of this study, increasingly contain content that adolescents will find attractive. To some degree, it appears that, due to the MSA, the ammunition that tobacco companies had in targeting youth (e.g., cartoons) has simply been replaced with a stronger

focus on a targeting technique that has been effective for past decades.

### Limitations and Suggestions for Future Research

Although the findings of this study shed light on the nature of sexual imagery in cigarette advertising before and after the MSA, some limitations need to be acknowledged. First, this study cannot make the absolute assertion that the prevalence of sexual imagery in cigarette ads will contribute to increases of youth smoking behaviors post-MSA because this study was a content analysis, which does not directly address the effects of sex in cigarette advertising. Prior research has claimed that content-based data do provide a basis for speculating about the correspondence between creation, content, and advertising effects (Paek et al., in press; Riffe, Lacy, & Fico, 1998; Stempel, 1981). Thus, future research is needed to use true experimentation to examine how the effects of exposure to cigarette advertising featuring sexual images on adolescents' perceptions of cigarette smoking differ before and after the MSA.

Furthermore, this study relied on only three magazines over time, which may result in a lack of generalization of the results. Even though such magazines have high adult and youth readerships, they may still cause a validation problem of the findings because the current research did not analyze cigarette ads across different genres of magazines, such as culturally specific magazines or gender-oriented magazines. It would be beneficial to broaden the sample frame. Hence, further research is necessary to retest whether the results of this study showing the changes in sexual imagery of cigarette advertising pre- and post-MSA hold true for other magazine categories covering a wide range of demographic readership profiles.

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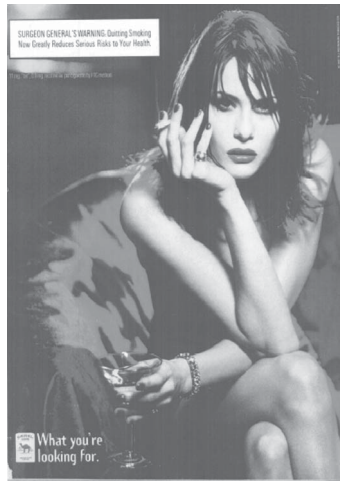
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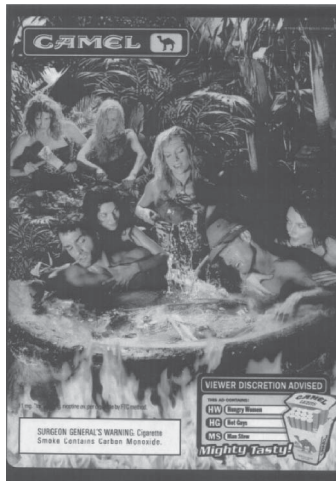
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APPENDIX

Sexual Attractiveness



Sexual Behavior



Voyeurism



Fantasy

