

# A Content Analysis of Web Sites Promoting Smoking Culture and Lifestyle

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The present study examined smoking culture and lifestyle Web sites listed on Yahoo!, a popular Internet search catalog, to determine whether the sites were easily accessible to youth, featured age or health warnings, and mentioned specific tobacco brands. A content analysis of photographs on these sites assessed the demographics of individuals depicted and the amount of smoking and nudity in the photographs. The sample included 30 Web sites, all of which were accessible to youth and did not require age verification services to enter them. Cigarette brand names were mentioned in writing on 35% of the sites, and brand images were present on 24% of the sites. Nearly all of the photographs (95%) depicted smoking, 92% featured women, and 7% contained partial or full nudity. These results underscore the need for greater research and monitoring of smoking-related Internet content by health educators and tobacco control advocates.

*Keywords:* internet; Web sites; tobacco; smoking; adolescents; policy

In August 2001, 143 million Americans or 54% of the U.S. population accessed the Internet.<sup>1</sup> Family households with children younger than age 18 were more likely to access the Internet (62%) than family households with no children (53%) and nonfamily households (35%). Children and teenagers used the Internet more than any other age group; 69% of 9- to 17-year-olds used the Internet compared to only 37% of individuals age 50 and older. In the United States, 2 million new Internet users are added each month.<sup>1</sup>

As a result of the growing popularity of the Internet, tobacco control organizations have begun to harness the vast potential of the Internet to reduce the public health burden of smoking. For instance, QuitNet™ has established an acclaimed Web site to help people quit smoking ([www.quitnet.com](http://www.quitnet.com)), the Smokescreen Action Network ([www.smokescreen.org](http://www.smokescreen.org)) mobilizes tobacco control activists with online discussion groups and advocacy alerts, and the Centers for Disease Control and Prevention's

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Tobacco Information and Prevention Source ([www.cdc.gov/tobacco](http://www.cdc.gov/tobacco)) provides resources for state tobacco programs and features the latest data on tobacco use and summaries of the U.S. Surgeon General's reports. Tobacco industry internal documents that were previously secret are now publicly available on corporate Web sites as part of the U.S. Attorney General's recent Master Settlement Agreement ([www.tobaccoresolution.com](http://www.tobaccoresolution.com)). The journal *Tobacco Control* even features a "Web Watch" section that highlights important tobacco control resources on the Internet.<sup>2</sup> Nevertheless, the Internet has also been an equally useful medium for pro-smoking individuals and groups, but this phenomenon has received limited attention by researchers and tobacco control advocates.

To address the role of the Internet in promoting adolescent smoking, the Center for Media Education (CME) examined whether tobacco- and alcohol-related Web sites targeted young people using cartoons, personalities, language, music, or branded merchandise that are popular in youth culture.<sup>3,4</sup> The CME reports concluded that although the alcohol companies are clearly targeting youth on the Internet with cartoons and interactive games, tobacco company sites have limited branding that appeals to youth. In their most recent analysis of 66 Web sites promoting tobacco use,<sup>4</sup> the CME found that none were dedicated to national cigarette brands, and only a few were corporate sites. The cigarette company corporate sites did not advertise their company's brands or employ marketing techniques that might appeal to children. Rather, the corporate sites provided background information on the company, had a serious tone, and highlighted the company's efforts to prevent youth smoking. The CME concluded that the sites with the greatest youth appeal are not corporate sites but those devoted to smoking culture and lifestyle. These sites featured pictures of celebrities smoking, smoking tips, and chat rooms or discussion boards for building a pro-smoking community. Some sites warned users that they must be at least age 18 to view their contents, but any child willing to lie about his or her age would have been able to access them.

The CME also noted that several smoking culture and lifestyle sites provided links to pornographic Web sites, and some featured photographs and "smoking fetish" videos of clothed and unclothed women smoking. Although Medline and PsychInfo searches on the words *smoking fetish* and *tobacco fetish* yielded no relevant citations (search conducted May 7, 2001), a few newspapers have featured articles on smoking fetishism. One of the most notable was a 1996 *Wall Street Journal* article that focused on the growing commercial popularity of videos featuring women smoking.<sup>5</sup> According to one producer interviewed, the essential ingredient to a great video is not nudity but "the look, the attitude, the mannerism of smoking." Thus, not all smoking fetish videos are sexually explicit. In fact, another producer interviewed had received complaints about nudity cluttering up one of his smoking videos.<sup>5</sup> Individuals with smoking fetishes have sex lives that "revolve around—or even depend completely on—the encounter of a lit cigarette and a woman's lips."<sup>6</sup> Individuals with smoking fetishes tend to focus on one or more of the following smoking-related behaviors, such as lighting up, inhaling, exhaling, dangling, or holding a cigarette. Fetishism spans a continuum, with most individuals being aroused by images of clothed women smoking, some needing to see their sex partner smoking, and others preferring to view smoking pornography.<sup>6</sup>

The purpose of this study was to conduct a content analysis of smoking culture and lifestyle Web sites. This study expands on the earlier CME work by employing a standardized protocol to identify the Web sites, assessing the interrater reliability of coding, and examining the content of photographs, as well as the overall Web site from which the photos were drawn. Specifically, this content analysis focused on whether the *sites* allowed unfettered access to underage youth, contained warning information about

smoking, mentioned tobacco brand names, made references to smoking fetishism, or offered products for sale. In addition, an analysis of Web site *photographs* assessed the demographics of individuals depicted (e.g., gender, perceived age, and race/ethnicity), the social context portrayed (e.g., whether individuals were depicted alone or as part of a group), whether individuals were shown smoking, and whether the photograph contained any nudity.

## METHOD

### Sampling

There is currently no standardized method of sampling content featured on the World Wide Web.<sup>7</sup> In the absence of standardized protocols, we attempted to locate pro-smoking Web sites in the manner that a typical Internet user might find them: by searching for them on Yahoo! (www.yahoo.com). At the time of data collection, Yahoo! was the most visited *search* site in the United States. It was the third most visited *overall* site in December 2001, receiving more than 71,487,000 unique visitors, according to Media Metrix (www.mediametrix.com). Yahoo! is a search catalog of Web sites that have been prescreened by Yahoo! staff, and sites are organized hierarchically within categories. Internet researchers recommend using a search catalog such as Yahoo! when the research topic is in the early stages and when one is seeking general background information on a broad topic.<sup>8</sup> The sample included all English-language Web sites promoting smoking culture that were linked directly to Yahoo!. We excluded sites for individuals and organizations that manufacture or sell tobacco products because the focus of this study was on sites promoting the act of smoking, rather than the sale of tobacco products.

We conducted the search by using the keyword *smoking* and then classifying all listed sites as either anti-smoking or pro-smoking. For instance, anti-smoking sites offered cessation services or were sites for tobacco control advocacy groups. In contrast, the smoking culture and lifestyle sites were all sites promoting smoking, which included sites that displayed pictures of celebrity smokers, provided information on smokers' rights, or featured smoking fetish images and videos. Yahoo! categorized these sites under headings such as "Recreation > Hobbies > Smoking" or "Society and Culture > Sexuality > Fetishes > Smoking."

This Yahoo! search on "smoking" yielded 27 categories and 247 Web sites. We examined each of these sites to determine if a smoking culture and lifestyle site promoted any form of tobacco use, such as cigarettes, cigars, or smokeless tobacco. Excluded from the sampling frame were the following: 94 sites for tobacco distributors, manufacturers, and retailers; 104 sites that focused on addiction, cessation, or tobacco control advocacy; 6 chat rooms; 2 nontobacco sites; 10 links that were nonfunctional; and 1 duplicate. The final sample consisted of 30 Web sites. Within these 30 smoking culture and lifestyle sites, 21 featured photographs. All photographs on the main page or "one click" from the main page were coded, yielding 1,689 photographs.

### Procedure

Web researchers recommend keeping records of sites because they are not permanent.<sup>9</sup> Therefore, we downloaded all 30 Web sites on April 5, 1999, using WebRecord's Research ProVersion 2.0 and then conducted the content analysis coding. We developed a

standardized coding scheme and training manual that accompanied a 3-hour training that included practice coding of Web sites that were not part of this study. A single rater, a trained female college student, coded all of the Web sites and photographs included in this study. A second rater (author Rebecca E. Lee) coded a subset of the photographs in an interrater reliability assessment described later.

### Measures

The content analysis rating form reflected the three units of analysis: (a) content featured on the main page of the Web site, (b) content featured either on the main page or one “mouse click” from it, and (c) photographs appearing either on the main page or one click from it.

#### Main Page Structure and Content

The coder first examined the main page of the Web site, which was the front page or homepage that appeared on the browser screen. The coder assessed characteristics of the main page separately from the rest of the site for two primary reasons. Main page content draws viewers into subsequent pages of the Web site, and any visitors to the site would be exposed to the main page even if they do not visit any links within the Web site. The following five aspects of the main page were coded.

*Minimum Age Verification.* The coder indicated whether (a) access was unrestricted and no age-related warnings appeared, (b) an age-related warning appeared either on the main page or as a stand-alone page, or (c) access to the site was blocked to those not registered with an adult verification service (e.g., AdultCheck™ or AgePass™).

*Types of Tobacco Products Depicted.* The coder recorded whether any of three types of tobacco products (cigarettes, cigars, and smokeless tobacco) were depicted in photos or other graphic images on the main page of the site.

*Reference to Smoking Fetishism.* The coder indicated if the word *fetish* or *fetishism* appeared.

*Health Warnings.* The coder indicated if sites displayed any of the four U.S. Surgeon General’s warnings about the health hazards of smoking that are mandated by the Federal Trade Commission to appear on all cigarette packages and advertising.<sup>10</sup>

*Depictions of Smoking-Related Cartoons.* The coder noted the presence of either cartoon characters representing cigarette brands (e.g., Joe Camel) or cartoon characters who were depicted smoking anywhere on the main page.

#### Site Characteristics (Main Page or One Link From Main Page)

*Cigarettes and Alcohol.* Any depiction of alcohol in conjunction with cigarettes was recorded. For instance, a smoker might be photographed holding a can of beer or a glass of wine.

*Stories About Smoking.* The coder recorded whether the Web site posted stories about smoking. We did not count brief one- or two-sentence commentaries by the Web page owner or e-mailed feedback from visitors. Rather, smoking stories were identified as longer narratives that focused on the experience of smoking or the exploits of smokers and were often categorized under a “smoking stories” section of the Web site.

*Presence of Interactive Features.* These features included a guest book, LISTSERV mailing list, bulletin board, or chat room that invited users to participate in a dialogue about smoking-related issues.

*Links to Other Sites.* The coder indicated whether the Web site included links to other sites that were outside the domain of the home site.

*Type of Sexual Content.* The coder recorded whether the Web site included either text references or pictures featuring bondage, discipline, sadism, or masochism.

*Tobacco Brands.* The coder recorded whether any specific tobacco brands were mentioned in the text or pictures and if any tobacco advertising was featured.

*Items for Sale.* The coder indicated whether tobacco products or smoking devices were available for sale on the Web site, including cigarettes, loose tobacco, cigars, or paraphernalia. In addition, the coder noted other products for sale, including videotapes or pictures of women smoking or fetish devices (e.g., smoking harnesses, leather goods such as whips or boots).

### **Characteristics of Photographs**

The coder noted the demographic characteristics of each person depicted in the photographs. The coder assessed the gender (male, female, both, neither [inanimate object], or unknown), perceived age (younger than 18, 18 or older, and unknown), and perceived ethnicity (White, African American, Asian, Latino, or unknown) of the people depicted in each photograph.

The coder assessed the number of people smoking in the photograph to be none, one, more than one, or unknown. The coder indicated whether the picture portrayed smoking—either explicitly with a person holding, lighting, exhaling, or inhaling a cigarette or implicitly with a person sitting near a lit cigarette resting in an ashtray.

Photographs were rated for the degree of nudity portrayed: (a) no nudity, (b) a person wearing a bathing suit, (c) a person wearing lingerie or sheer (see-through) tops, (d) partial nudity (unclothed buttocks or female breasts), or (e) frontal nudity (male or female genitalia or pubic hair visible).

### **Analysis**

Units of analysis in this study included individual photographs on Web sites, the homepage of Web sites, and content featured on the homepage or one click from it. Similar to other content analyses of tobacco portrayals in other media,<sup>11-13</sup> data analysis was primarily descriptive. Over the past 25 years, most published quantitative content analyses have been descriptive, and description is particularly useful in the early phases of

research in a given topic area.<sup>14</sup> In the analysis of photographs, bivariate analyses were conducted comparing individuals depicted as smoking versus not smoking.

We also assessed the interrater reliability of the coding process. Approximately 20% ( $n = 329$ ) of the photographs were coded by a second rater to determine percentage agreement for characteristics of photographs. There was high agreement between the raters: 99% for gender, 98% for perceived ethnicity, 97% for perceived age, 100% for smoking status, 99% for number of people, and 87% for level of nudity.

## RESULTS

### Site Access

None of the 30 Web sites restricted access to minors by using adult verification methods, such as requiring a password from an age verification service (see Table 1). Thus, all Web sites were completely accessible to children who may have visited. Ten (33%) featured an age-related warning or asked visitors to confirm that they were at least 18 years of age because the site contained either “adult” material, photographs of people smoking, or nudity.

### Tobacco Products

Of the sites, 19 depicted images of cigarettes and 5 depicted images of cigars on the main page. None of the sites depicted smokeless tobacco products. A tobacco product brand name appeared in writing on just over one-third of the sites on either their main page or one link from it. This reference typically identified the brand of cigarette smoked by the owner of the Web site or someone featured on the site. For instance, on Smoke and Be Cool ([www.members.aol.com/rtvdave/cigs.html](http://www.members.aol.com/rtvdave/cigs.html)), an individual named Dave wrote, “You know as well as I that no matter how delicious a cigar may be, there’s nothing cooler than a Camel.” Nearly one-fourth of the sites featured a clearly recognizable tobacco brand image. Some sites showed pictures of a pack of cigarettes lying on a table with the brand name clearly visible, and others included icons of cigarette brands such as the Marlboro Man™ or Joe Camel™.

Two of the Web sites featured tobacco advertisements. For instance, Svein Martin’s homepage (<http://home.online.no/~smpeders/index.htm>) displayed some cigarette advertising posters along with a large collection of scanned images of cigarette package covers. The earliest packs were dated from the 1890s and continued up to the present. The site featured images of 27,842 cigarette packs that represented more than 140 different countries (e.g., 50 packs from Uruguay, 1,318 from the United States, and 3,348 from China).

None of the sites featured the U.S. Surgeon General’s warnings about the health hazards of smoking. Nevertheless, Lightup 98 ([www.geocities.com/SouthBeach/Breakers/7859/index.html](http://www.geocities.com/SouthBeach/Breakers/7859/index.html)), which is now defunct, posted this colorful warning:

Smoking is a self destructive passtime (*sic*). This site does not encourage taking up smoking and would willfully discourage those considering it. This site is dedicated to presenting material which caters to those who enjoy the site (*sic*) of women lighting up, it does not, and will not contain nudity in any form.

Table 1. Characteristics of 30 Smoking Culture and Lifestyle Internet Web Sites

Characteristic	%
Minimum age verification	
Site access	
Unrestricted access—no minimum age warning	66.7
Unrestricted access—featured minimum age warning	33.3
Blocked access using age verification	0
Tobacco products	
Types of tobacco products depicted on main page	
Cigarettes	63.3
Cigars	16.7
Smokeless tobacco	0
Mentioned a tobacco brand name in writing	34.5
Featured a tobacco brand image	24.1
Featured tobacco advertising	7.0
Featured U.S. Surgeon General's health warning on main page	0
Other characteristics of Web sites	
Showed images containing both cigarettes and alcohol	20.0
Featured smoking-related cartoons on main page	13.3
Featured stories about smoking	36.7
Linked to one or more other sites	93.1
Contained interactive features	46.7
Sexual content	
Mentioned the word <i>fetish</i> on the main page	20.0
Sold "smoking" videos	30.0
Depicted bondage, discipline, sadism, or masochism	16.7

Those who were not "offended" by this material were instructed to "Come on in!"

In this site, viewers were treated to dozens of images of women, including some in nurses' uniforms, photographed lighting up their cigarettes.

#### Other Characteristics of Web Sites

Alcohol and cigarettes were featured together in one-fifth of the sites. A typical image depicted an attractive blonde-haired woman dressed in an evening gown holding a champagne flute in one hand while inhaling from a long black cigarette holder in her other hand.

Only 4 of 30 sites contained cartoons, and when they were present, they depicted Joe Camel™ or The Simpsons™. Stories about smoking were featured on more than one-third of the sites. The Smoke Signals site ([www.smokesigs.com](http://www.smokesigs.com)) offered one of the most comprehensive archives of stories written about smoking. Some of these stories were fictional, whereas others claimed to be factual. The site categorized the stories by the year they were written, as well as by the major story themes. Sample story themes included "male gets girlfriend to smoke," "smoking couple," "young girl starts smoking," "mother gets daughter to smoke," or "had quit smoking but started again." Story titles included "Smoky Beginnings for a Virgin," "Like Mother, Like Daughter," and "Daria's Smoking

Apprenticeship.” The length of the stories on these sites ranged from a few paragraphs to the length of short novels.

Nearly all of the sites linked to other sites, allowing visitors easy access to other smoking culture and lifestyle sites, such as smoking fetish sites or smokers’ rights sites. Although the exact percentage was not assessed, the coder noted that some of the links led to hardcore pornographic sites.

About half of the sites contained interactive features such as a guest book for viewer reactions or a chat room dedicated to smoking fetishism.

### Items for Sale

None of these smoking culture sites sold cigarettes, and only two sold cigars. Two sites sold smoking paraphernalia such as cigarette rolling papers, rollers, holders, and cases; humidors, cigar cutters, and cigar cases; or lighters and ashtrays.

### Sexual Content

One in five sites included references to smoking fetishism. For instance, the Smoke Signals site advertised that the fetish magazine *Leg Show* has deemed smoking to be “the fetish of the 90’s.” The creator of the Web site Ellefume ([www.geocities.com/FashionAvenue/6745/](http://www.geocities.com/FashionAvenue/6745/)) described that site by writing,

Behold this fresh collection of young girls with a hang for sensual smoking. Many a man has undoubtedly watched in awe how a young lady lit up at the bus stop or by the school gates. Or how about the unexperienced first-time smoker, still unsure of her technique. Don’t we all adore this variation on the femsmoke theme? They sure know how to create waves amongst men, both young and old. ([www.ellfumeladysmokersmuseum/www.geocities.com/FashionAvenue/6745/index.html](http://www.ellfumeladysmokersmuseum/www.geocities.com/FashionAvenue/6745/index.html))

In keeping with the smoking fetish tradition of focusing on specific aspects of smoking behavior, one of the sites, Lightup 98 ([www.geocities.com/SouthBeach/Breakers/7859/index.html](http://www.geocities.com/SouthBeach/Breakers/7859/index.html)), featured photographs of women lighting their cigarettes in honor of the “neglected” fetish behavior of lighting up.

Videos on smoking were sold on 30% of the sites. Elaborate descriptions provided a glimpse of what potential buyers might expect to find on these videos. For instance, the Smoke Signals site featured a video with a woman named Artemis who was described as “the queen of open-mouth inhales” and was also known as Slave “A.” The advertisement says,

As the video opens, Artemis is dressed in black dress, gold gloves and heels, worshipping her mistress, blonde-haired Goddess Sondra (with ultra-length nails). . . . Artemis takes center stage and works her magic. She chain-smokes Saratogas with fabulous displays of open-mouth inhales, languid smoke rings and French inhales, while caressing herself and exchanging teasing comments with an off-camera Sondra, about her smoking.

In another video titled *Smoke Domination*,

Goddess Sondra smokes Saratoga 120s while dominating or lightly torturing a number of slaves (most of them male), using them as ashtrays, forcing them to lick her boots, and making sure they know who's in charge!

Depictions of bondage, discipline, sadism, or masochism were featured on 5 of 30 sites. Examples included pictures of women wearing spiked heels and black latex or leather outfits or pictures of women with "claws"—extremely long nails.

### **Characteristics of Photographs**

As shown in Table 2, the overwhelming majority of photographs featured adult women. Almost none of these individuals appeared to be minors. There was little diversity in the racial-ethnic background of those pictured, the bulk of the photographs showed individuals of European descent, and only a handful of pictures portrayed African American or Asian people. A single individual appeared in more than 95% of photographs. The majority of photos did not contain nudity, although 127 featured people wearing lingerie or sheer tops, 71 contained partial nudity, and 48 showed frontal nudity. Of the 21 Web sites containing images, 10 featured partial or frontal nudity (33% of Web sites overall and 48% of Web sites with images). Although there was considerable diversity in how photographs were composed, a typical photograph depicted a clothed adult White woman who was smoking alone. Table 3 shows that when two or more individuals were depicted, the photograph was less likely to contain smoking, but when there was nudity, all of the photographs depicted smoking.

## **DISCUSSION**

This study builds on content analyses conducted of smoking in other popular media such as movies,<sup>13,15</sup> television,<sup>12</sup> magazines,<sup>16,17</sup> music videos,<sup>11</sup> and popular music.<sup>15</sup> A total of 30 Web sites and 1,689 photographs promoting smoking lifestyle and culture were identified. These sites featured abundant and diverse pro-smoking content, such as cigarette brand imagery, photographs of cigarette package collections, photographs of clothed and unclothed women smoking, smoking fetish videos for sale, and the pairing of smoking with sexuality and alcohol use.

Tobacco brand images were featured on one-fifth of the sites, and written brand names were featured on one-third. Tobacco advertising was contained on 7% of the sites. Although the specific health risks of smoking are mandated by law to appear on cigarette packages and advertising,<sup>10,18</sup> none of the sites in this study displayed any of the four rotating U.S. Surgeon General's health warnings. Thus, these Web sites portrayed only positive aspects of smoking and none of the drawbacks.

Aside from promoting specific tobacco brands, several sites catered to smoking fetish interests. Approximately one-third either sold smoking fetish videos or featured stories glamorizing smoking. Nudity was also featured on one-third of the sites. All of the photographic images that featured nudity also depicted smoking. Thus, on a notable subset of these sites, sexuality was strongly linked with smoking behavior. Smoking fetishism has received limited attention in the scientific literature, and results of this study suggest that future research on this topic appears warranted.

Table 2. Characteristics of 1,689 Images Featured on 30 Smoking Culture and Lifestyle Internet Web Sites

Characteristic	%
Gender	
Female	94.4
Male	6.7
Both male and female	0.9
Inanimate objects	0.1
Perceived age	
Under 18	0.2
18 or older	99.8
Race/ethnicity	
White	94.7
African American	3.8
Asian	11.3
Latino	0.1
Number of people depicted	
Individual	95.4
Two or more people	4.6
Are people smoking?	
Yes	91.9
No	8.1
Level of nudity	
No nudity	85.3
Bathing suit	1.0
Lingerie/sheer top	7.5
Partial nudity	4.2
Frontal nudity	2.9

NOTE: The coder was able to rate with confidence the picture content for all but 2 to 8 of the 1,689 photographs in all categories except perceived age, in which there were 70 “don’t know” responses (4.1% of total).

### Potential Impact on Youth

None of the smoking culture and lifestyle Web sites examined in this study required age verification procedures that are commonly available on the Internet to prevent under-age youth from viewing pornography and other age-inappropriate content. Reminiscent of the “forbidden fruit” approach to encouraging smoking,<sup>19</sup> some of the warnings on these Web sites may actually lure youth by “warning” them that they will be able to view nudity if they choose to enter the site. The same argument has been made about the dubious function of warning pages on Web sites promoting the “adult pleasures” of cigar smoking<sup>20</sup> and on Web sites containing hate speech.<sup>21</sup> The lack of barriers to entering these smoking culture sites is particularly notable because these 30 sites contained 119 pictures that featured partial or full nudity. Similar images in a motion picture would garner a restricted rating (e.g., “R” or “NC-17”). Although the majority of sites or pictures did not contain nudity, the overall amount of nudity they contained is notable. Whereas about 1.5% of Internet content is estimated to contain pornography,<sup>22</sup> 33.3% of these

Table 3. Smoking Status of Individuals in Photographs ( $N = 1,689$ ) as a Function of the Number of Individuals Depicted and Level of Nudity (in percentages)

	Number of People <sup>a</sup>		Level of Nudity <sup>b</sup>		
	One	Two or More	None	Lingerie	Nudity
Smoking	92.5	81.8	90.6	99.2	100
Not smoking	7.5	18.2	9.4	0.8	0

a.  $\chi^2(1) = 11.2, p < .001$ .

b.  $\chi^2(2) = 22.9, p < .001$ . The "bathing suit" category has been merged into the "no nudity" category. Lingerie and see-through sheer tops remain unchanged, and partial and full nudity have been collapsed together.

smoking culture and lifestyle sites featured at least one nude image, and 7.0% of the pictures featured partial or frontal nudity.

There are other reasons why the Internet has attracted concern as a venue that may promote youth smoking. Although Internet tobacco sales sites were not examined in this study, some youth smokers report purchasing tobacco products through Internet vendors,<sup>23,24</sup> which currently appear to take few precautions to avoid selling tobacco to minors.<sup>3,20,25,26</sup> Aside from providing youth access to tobacco, smoking-related Web sites may stimulate demand for the product through promotion of smoking lifestyle and culture.

Smoking on the Web sites examined in this study was portrayed as a normative activity with few harmful side effects. Prior studies have documented that youth generally overestimate the number of smokers in their schools and communities. Studies have shown that youth who have made high estimates of smoking prevalence were more likely to try smoking, begin smoking, or increase the amount they smoked.<sup>27,28</sup> Only 23.5% of the U.S. adult population smokes,<sup>29</sup> whereas 92% of photos on the smoking culture and lifestyle Web sites depicted someone smoking. This high rate of smoking sends the inaccurate and detrimental message to youth and others who might view these sites that smoking is a normative activity among adults.

According to social cognitive theory,<sup>30</sup> these sites have the potential to encourage smoking if they are viewed by youth. Youth are provided with ubiquitous role models for smoking. In fact, these 30 Web sites featured more than 1,500 photos of individuals who were smoking. Smoking was also associated with images of sexuality and alcohol use and not with any negative outcomes. In addition to the images on the sites, one-third featured smoking stories that instructed would-be smokers on the merits of smoking and provided reasons for resuming smoking for those who have already quit. Altogether, exposure to such content has the potential to promote smoking among viewers interested in learning and imitating these behaviors. The extent of youth exposure to these Web sites is a relatively new research topic. One study in England examined the exposure of 15- to 16-year-olds to various tobacco marketing activities.<sup>31</sup> Awareness of Internet sites for cigarettes or smoking was 6% among those who tried smoking and 4% among current smokers. Comparable data for the United States are not yet available. Given the relatively low level of current exposure from the English study, it appears that the impact of smoking lifestyle and culture sites on the Internet is currently significantly less than that of smoking depictions in other popular media such as movies.<sup>15,32,33</sup>

### Implications for Practice

The findings of this study present several challenges to tobacco control activists. Many of the successes of the tobacco control movement have occurred because of the passage and enforcement of policies.<sup>34,35</sup> These policies have restricted smoking in indoor environments, banned retail tobacco sales to minors, and restricted tobacco advertising. Regulating the Internet, however, is far more challenging because of the vast size of the Internet, the lack of current regulations governing tobacco-related Internet content, ambiguity in jurisdictional authority, and the difficulty of physically locating individuals who produce content in cyberspace.

Therefore, we make the following nonpolicy recommendations. First, it is apparent that tobacco control activists and researchers need to educate themselves and others about the range of pro-smoking content that is easily available on the Internet. There does not appear to be widespread knowledge about the existence of these smoking culture and lifestyle Web sites.

Effective countermarketing Web sites are currently needed. Just as tobacco control advocates have placed smoking prevention messages in venues where smoking has been promoted (e.g., television, billboards, movie theaters, motorsport racing, baseball games), advocates must also learn to intervene with a new breed of smoking prevention Web sites that effectively compete with the growing number of sophisticated smoking culture and lifestyle sites. In the event that future studies find that youth are viewing these sites, developing programs that help “inoculate”<sup>36</sup> youth against the effects of future exposure to such content would certainly be worthwhile.

In theory, parents could prevent their children from viewing pro-smoking Internet content with the use of filtering software or by monitoring their children’s online activities. Existing filtering and blocking software programs fail to screen out Web site content that promotes smoking,<sup>37</sup> and fewer than one-third of parents with home Internet access use filtering and blocking software.<sup>38,39</sup> Parent monitoring may be effective, but few parents chose this option. A survey of 1,350 online households found that more than 50% of parents of children between 11 and 15 years old say they allow their kids to go online whenever they want, and only 5% of parents with children age 16 and older say they do any monitoring of their kids’ online activities.<sup>39</sup> Similar findings emerged from a study of adolescents in which only 6% reported that they view Web sites mainly with their parents, compared to 61% who mainly view them alone or 21% who view them mainly with siblings or friends.<sup>40</sup>

### Future Research

The goal of this study was to explore and document the content of smoking culture and lifestyle Web sites. The next logical step is to launch a larger, more comprehensive study with a larger sample of Web sites that captures more detailed information about each site. Although this small study employed the most visited Web search engine on the Internet, a more rigorous approach would be to use multiple search engines as has been done in other Internet studies.<sup>26,41,42</sup> In addition, future investigations should assess who is visiting these sites and how often they access them. Is it children, teens, young adults, or only adults who are visiting these sites? What are the other demographic characteristics of visitors, such as their gender, race, smoking and socioeconomic status, or nationality? Unfortunately, collecting accurate information on these sociodemographic questions is difficult. Owners of the site could and probably do collect such information, but obtaining their

cooperation is unrealistic. It may also be possible to identify some demographic characteristics by examining visitors' "cookies" and their longitudinal clickstreams, but these are difficult to access, the information is extremely sensitive, and its use is controversial. Self-report questionnaires are another method of collecting this information and have been employed to understand college students' viewing of pornographic and violent movies.<sup>43</sup> Survey methods still create difficulties when asking children about online habits, given the sensitivity of potential questions and whether asking about the topic invokes youth curiosity to view content.

Future research should also determine whether visiting these sites has any impact on viewers' attitudes and behavior. Does Web content make users more curious about smoking, or does it turn them off? What is the impact of pairing smoking and nudity? These data are sensitive to collect, and it is not feasible to understand the reactions of minors to most of this content. Nevertheless, understanding the impact on adults seems warranted.

### **Strengths and Limitations**

This is one of the first research studies to examine how smoking is glamorized and promoted on the Internet. We employed a standardized protocol with rigorous training, and consequently, we achieved highly reliable measurement. More than 90% of the sites that we sampled were linked to others, and sampling these sites would substantially increase the sample size and should be considered in future studies. In this study, we examined the main page of the Web site and its pages that were only one link from the main page. We employed this strategy because it would capture content that would be viewed by nearly all people who visited the site, even those who did not travel deeper into the Web site. This strategy was similar to a content analysis of the front pages of newspapers, in which content was examined only on the most prominent page.<sup>44</sup> From this strategy, it became clear that there are often multiple layers of links, and future research is needed that uses a comprehensive sampling strategy that exhausts the links in a Web site. The small sample size of 30 sites also precluded the use of multivariate analysis methods. Future studies with larger sample sizes can take advantage of these more sophisticated analytic methods.

### **Conclusion**

The findings of this study present a disturbing picture of how Web sites may promote smoking culture and lifestyle in a global venue that is readily accessible to individuals of all ages. Tobacco use is sanctioned and glamorized in words and pictures, creating an online community where experienced and curious smokers can seek refuge. A couple of Web sites contained tobacco advertising that has been banned on television and radio since 1971 in the United States, and one-third of the sites featured references to specific tobacco brands. This research underscores the urgent need for greater monitoring of smoking-related Internet content, the implementation of effective policy remedies, and the development of effective countermarketing sites to combat the forces promoting smoking on the Internet.

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