Smoking Selfies: Using Instagram to Explore Young Women’s Smoking Behaviors

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Abstract
Our research provides social scientists with areas of inquiry in tobacco-related health disparities in young adult women and opportunities for intervention, as Instagram may be a powerful tool for the public health surveillance of smoking behavior and social norms among young women. Social media has fundamentally changed how to engage with health-related information. Researchers increasingly turn to social media platforms for public health surveillance. Instagram currently is one of the fastest growing social networks with over 53% of young adults (aged 18-29) using the platform and young adult women comprise a significant user base. We conducted a content analysis of a sample of smoking imagery drawn from Instagram’s public Application Programming Interface (API). From August 2014 to July 2015, 18 popular tobacco- and e-cigarette-related text tags were used to collect 2.3 million image posts. Trained undergraduate coders (aged 21-29) coded 8,000 images ($r = .91$) by type of artifact, branding, number of persons, gender, age, ethnicity, and the presence of smoke. Approximately 71.5% of images were tobacco-relevant and informed our research. Images of cigarettes were the most popular (49%), followed by e-cigarettes (32.1%). “Selfies while smoking” was the dominant form of portrait expression, with 61.4% of images containing only one person, and of those, 65.7% contained images of women. The most common selfie was women engaged in “smoke play” (62.4%) that the viewer could interpret as “cool.” These “cool” images may counteract public health efforts to denominalize smoking, and young women are bearing the brunt of this under-the-radar tobacco advertising. Social media further normalizes tobacco use because positive images and brand messaging are easily seen and shared, and also operates as unpaid advertising on image-based platforms like Instagram. These findings portend a dangerous trend for young women in the absence of effective public health intervention strategies.

Keywords
tobacco, smoking, vaping, e-cigarettes, young adult, women, Instagram, selfie

Introduction
Cigarette use continues to be the number one preventable disease in the world and in the United States (Bauer, Briss, Goodman, & Bowman, 2014; Centers for Disease Control and Prevention, 2012). Young adults are particularly vulnerable to tobacco use due to targeted tobacco marketing campaigns (Cortese, Lewis, & Ling, 2009; Ling & Glantz, 2002), with approximately 20% of young adults smoking cigarettes, with 18 to 25 having the highest prevalence at 41% (Richardson, Williams, Rath, Villanti, & Vallone, 2014). Although the smoking trends for young adult men show higher prevalence when compared to young adult women (Nelson et al., 2008), it is not as if young adult women have little risk of tobacco use (Li, Holahan, & Holahan, 2015) which can lead to tobacco addiction and multiple tobacco use (Lee, Hebert, Nonnemaker, & Kim, 2014; Ling & Glantz, 2002). Anti-tobacco marketing to youth such as those from the Truth Campaign, as well as anti-tobacco advertising and interventions in bars and clubs targeting young adults, helps in reducing or preventing smoking (Agaku, King, & Dube, 2014; Ling, Holmes, Jordan, Lisha, & Bibbins-Domingo, 2017). As Laestadius, Wahl, and Cho (2016) demonstrate in

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their research using Instagram hashtags (e.g., #ecig and #vape), the tobacco industry is already circumventing advertising bans on Instagram with corporate users comprising half of their sample of e-cigarette or vape posts, and none of the posts they found were critical of vaping tobacco use. Are we witnessing the tobacco industry using the shifting landscape of social media to advertise by influencing the creation and perpetuation of the “smoking selfie”? Who is mostly sharing these selfies, and what are in these images that are shared? What social groups are most at risk by seeing a social reconstruction of smoking re-normalization by means of a rapidly growing and minimally monitored technology that captivates a demographic most vulnerable to smoking initiation?

In this article, we provide early data on tobacco use in selfies through Instagram, and provide examples of how the selfies Instagram users share normalize tobacco use, thereby putting at risk the smoking rate declines seen over the past decades. We conclude that time is of the essence for public health professionals to begin using media technologies in their anti-tobacco counter-marketing strategies to stave off an uptick in use because, as we argue, the tobacco industry is already perfecting their marketing in social media.

Instagram represents one of the fastest growing social networks; at the time the Instagram sample was extracted, the platform had more than 400 million daily users, 90% of whom are under age 35 (Instagram, 2016; Smith, 2018); in 2014, Pew reported that 53% of young adults aged 18 to 29 used Instagram, compared to just 37% who used Twitter (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015). A huge draw to the platform is that Instagram is visually based, and users can manipulate their photographs through a variety of filters. Portraits of oneself (i.e., “selfies”) are highly common on Instagram (Hu, Manikonda, & Kambhampati, 2014).

Selfies may seem insignificant or fleeting to the casual observer, but it is an integral part of the self-identity construction, normative gender performance expectations, and the subculture of young adult women. Although nearly anyone can take—and probably has taken—a self-photo, or “selfie” as it is commonly called, the dearth of research on selfies suggests that these are gendered performances done by young women (Gorey, 2014; Tifentale & Manovich, 2014). In one such study that analyzed thousands of selfies from users in five cities across the world (Bangkok, Berlin, Moscow, New York, and Sao Paulo), women were more likely to take selfies than men (range 55.2% women in Bangkok to 82% in Moscow, with New York 61.6% women), and young women in particular (23.7 estimated median age, with women having the younger average age across all cities). Normative cultural expectations of young women center on physical appearances (Strahan, Wilson, Cressman, & Buote, 2006) and help explain why nearly half of all selfies fall into the “appearance” category (Deeb-Swihart, Polack, Gilbert, & Essa, 2017).

Sociologists and social psychologists often note the importance of this type of presentation of self (Goffman, 1959), as the clothes we wear and the roles we perform help establish and perpetuate self-identity. Selfies are an even faster way in which individuals can manage these performances because they can receive almost instantaneous validation (or correction) in their gendered performances. Although selfie images are consumed quickly and individually, their impacts on the consumer are cumulative like advertising (Kilbourne, 2016) and other print media (Cortese & Ling, 2011), with a recent study of young women finding that even the most fleeting perusal of selfies had a negative impact on their self-image (Eckler, Kalyango, & Paasch, 2017). Selfies can attract followers and increase online popularity (Marwick, 2015), making users “microcelebrities” (see Senft, 2013) through their consistent online self-presentation. In short, selfies are impactful to both the selfie-taker and the observer consuming the imagery.

We caution the reader not to interpret selfies as exclusively a young woman’s domain. The selfie is a nuanced cultural phenomenon used by all genders, documenting and exhibiting experiences from the banal to the advert of all users—from the common-folk to the celebrity (Abidin, 2016; Marwick, 2015). However, it is important to note that our research findings comport with earlier research on stealth tobacco advertising in bars and clubs that use popular people as “influencers” to use and thereby encourage product use of others. Although the tobacco industry historically built advertising campaigns on the use of female gender-normative performances in tobacco print advertising in the 1970s and 1980s (Anderson, Glantz, & Ling, 2005), in the 1990s and 2000s, the tobacco industry took their advertising to a stealthier method. The tobacco industry spent years psychographic profiling young men and women to understand their lifestyles, desires, aspirations, and gender expressions to market their tobacco products beyond traditional print advertising (Cortese et al., 2009; Cortese & Ling, 2011; Katz & Lavack, 2002; Ling & Glantz, 2002; Sepe, Ling, & Glantz, 2002). This article reifies another way the tobacco industry uses the gendered performances of young women—unknowingly or not—as tools for and targets of their stealth tobacco advertising methods, and that by doing so, it makes young adult women who use social media particularly vulnerable to these “crafty” and “cool” tobacco marketing efforts.

The recent rapid evolution of the media landscape and the widespread use of social media fundamentally altered the ways in which audiences receive health-related information (Cappella, Kim, & Albarracin, 2015; Himelboin, Smith, & Shneiderman, 2013; Napoli, 2011). Not only are people simply exposed to such information, but they also search for, create, share, and respond to content across multiple media platforms (Cappella et al., 2015). Researchers increasingly turn to the rich datasets offered by social media (e.g., Twitter) to conduct public health surveillance, tracking such topics as disease outbreaks (Culotta, 2010; Lampos & Cristianini, 2010), depression (De Choudhury, Gamon, Counts, & Horvitz, 2013), insomnia (Jamison-Powell, Linehan, Daley,
Evidence has shown that substance use frequently is portrayed and discussed on social media, often in positive terms, and that young people easily may access and engage with these posts (Egan & Moreno, 2011; Morgan, Snelson, & Elison-Bowers, 2010; Myslin, Zhu, Chapman, & Conway, 2013; Seidenberg, Rodgers, Rees, & Connolly, 2012). This finding is meaningful when considering tobacco use because, according to social cognitive theory (Bandura, 2001; Stefanone, Lackaff, & Rosen, 2010), people—especially young people—are strongly influenced by peers or others in social media and reality shows who “look” like they could be peers (Stefanone et al., 2010). Actual or perceived behaviors of peers and/or other valued social referents (such as celebrities) have been established as key risk factors for tobacco and other substance use among adolescents and young adults (Bandura, 1971; Stefanone et al., 2010; Steinberg & Monahan, 2007; Turner, Mermelstein, & Flay, 2004), and the advertising methods of microcelebrities (Abidin, 2016; Marwick, 2015) may be an additional risk factor in the rapidly growing social media advertising landscape. Repeated exposure to images modeling tobacco use behavior by members of one’s social network may increase the perceived prevalence of tobacco use among one’s peers, serving to normalize behavior and potentially resulting in imitation (Cialdini & Trost, 1998; Ravis & Sheeran, 2003).

Social media platforms also play a significant role in tobacco marketing; such marketing falls largely under the radar of the tobacco control community and outside the restrictions stipulated by the 1998 Master Settlement Agreement (Huang, Kornfield, & Emery, 2016; Huang, Kornfield, Szczypka, & Emery, 2014; Kostygina, Huang, & Emery, 2016; Kostygina, Tran, Shi, Kim, & Emery, 2016; National Association of Attorneys General, 1998). Advertising for tobacco products on social media offers high brand visibility (Richardson, Ganz, & Vallone, 2013), reaches a primarily young audience, and effectively circumvents the restrictive media marketing policies for tobacco. Users promote tobacco products organically on social media by incorporating them into narratives about their lives, while brands leverage consumer-generated content to extend their marketing reach when users post images in which those brands are visible (Carah & Shaul, 2016). Furthermore, celebrity presence on Instagram is quite high, and the extant studies examining celebrity substance use–related Instagram posts to date suggest that these communications have potential to reshape social norms about substance use behavior (Addiction-Treatment.com, 2014; Richardson et al., 2013; Richardson & Vallone, 2014). Tobacco control seized upon this opportunity in the Truth Initiative’s (2015) “unpaid spokesperson” television advertisement which featured images of young celebrities smoking and tagged them as unwitting marketers for the tobacco industry (Ad Age, 2014). The “unpaid spokesperson” ad first aired during the MTV Music Awards program and was part of Truth®’s “Finish It” campaign (Truth Initiative, 2015).

Methods

Data Collection

The data in this study were accessible to the public at the time of collection (April through July 2015) through the Internet, and our sample of 8,000 from 2,000,000+ images was collected through Instagram’s public Application Programming Interface (API) through the use of “tags.” Instagram users communicate through hashtags or “tags.” These tags are signposts for users to connect images around a theme and are discoverable via the Instagram platform for other users to view. For example, a user who has an affinity for clouds of smoke or vapor produced by tobacco, electronic cigarette, or vaping products might post an image of this action and tag the post as #smokeclouds. Other users can then search for the tag to view the images associated with that particular tag. It is important to note that, at the time, the API of Instagram had permitted this type of research methodology (see Highfield & Leaver, 2015), but no more. Today, Instagram is under ownership of Facebook (Marwick, 2015), and the shift in the Instagram API (Instagram, 2018a, 2018b) prevents replication of this and similar studies. Furthermore, the Terms of Service (TOS; Instagram, 2018c) prohibit researchers from using images or any other content that goes into a posted image found through hashtag searches without permission from the user, which is why we cannot include any images in this article.

We used websta.me, a web-based Instagram analytic platform connected to the Instagram API, to identify popular tobacco, electronic cigarette, and vaping tags. This search created a preliminary list of 683 tags that included brands, common terms, and slang. We narrowed this list to 18 tags to be included in our study based on research team expert consensus. Our final list of tags included the following: #cig, #cigarette, #cigarettes, #cigarillo, #cigarillos, #cigs, #ecig, #ecligs, #hookah, #nicotine, #rillo, #rillos, #smokeclouds,
Content Coding

We developed our coding classification system, instruments, and codebook based on a random sample of 1,000 images from the 8,000 sample noted above. The co-authors first coded this set to identify its relevance to tobacco or vaping. If an image contained an act or artifact of smoking or vaping, then the image could be coded for content. We developed a coding instrument and codebook based upon this set of relevant images. In cases where images were ambiguous or unclear in meaning, coders were instructed to use hashtags or text to contextualize intended meanings of the images.

The instrument and codebook included categories for objective measures: (1) artifact visible (cigarette, e-cigarette or cigalike or other vaping device, cigarillo or blunt, hookah, vaping liquid, tobacco package, cannot tell, and none), (2) person number (one, two, three or more, and none), (3) artifact likely has a brand name or logo (yes or no), smoking or vaping normally (yes or no), (4) smoke play or vape play (yes or no), (5) presence of marijuana (yes or no), and (6) image is an anti-smoking message (yes or no). Coders were trained with two training sessions and four test samples of 20 on how to determine the more subjective categories: (1) gender (all female, all male, both, and cannot tell), (2) age of primary person (probably/definitely high school age or younger, probably/definitely college age but under 30, probably/definitely older than 30, and cannot tell), and (3) ethnicity (mostly/all White, mostly/all Black, mostly/all another race or ethnicity, and cannot tell). Due to the nature of the in-app abilities for the selfie-taker to use photographic filters and vignetting that could affect the perceived skin tone, age, and gender, the subjective categories required “probability hedging” to allow coders the flexibility to self-assess with strong likelihood the strength of the claims without feeling they needed to exhibit absolute certitude.

We invited six (three males and three females) Dean’s List students aged 21 to 29 from the Anthropology and Sociology Program at Governors State University, and four students aged 21 to 29 from the Anthropology and Sociology Program at Governors State University, and four students aged 21 to 29 from the Anthropology and Sociology Program at Governors State University, to view images by the tags we provide in the “Methods” section or through the Instagram app.

This article does not include a semiotic analysis of the imagery’s meanings, nor examples of images, due to Instagram’s TOS that limits the reproduction of images without permission from the original users. We encourage readers to view images by the tags we provide in the “Methods” section either online or through the Instagram app.

Results

Content coding of the 5,721 Instagram photographs relevant to tobacco smoking or vaping behavior revealed that combustible tobacco cigarettes were the most popular images displayed, with the most prevalent type of image posted being one of a young White woman smoking a cigarette in a conventional fashion.

Coding of demographics among the images is presented in Table 1. By far the highest proportion of smoking-related images was coded for females at 67.4% compared to 29.7% showing males, and 2.7% in which both genders were visible. A majority of the coded photographs were found to be selfies showing a single individual at 61.4%, while 4.1% were group selfies containing two or more people and 34.5% did not include any people in the image frame. The most prevalent age group was college-aged at 87.5%, followed by high school age or younger at 8.9%, and the least prevalent was the “older than 30” age group at 3.6%. More than half of the images were judged to depict people of White ethnic background at 85.7%, with 4.6% Black and 9.6% “all other” ethnicities.

Content coding also indicated high presence of smoking artifacts and branding in the images. As shown in Table 2, of the 5,721 photographs coded, 2,299 (40.2%) contained artifacts
likely displaying a brand name or logo. Artifacts featured in the photographs were most likely to be cigarettes (47.2%), followed by e-cigarettes, other vaping devices, or vaping liquid at 32.1%, cigarillos at 3.6%, and hookah (2.4%).

Table 1. Demographics Among Smoking-Related Photographs on Instagram.

| Characteristic       | No. of photos | %   |
|----------------------|---------------|-----|
| Age                  |               |     |
| College              | 2,566         | 87.5|
| High school          | 261           | 8.9 |
| Older than 30        | 106           | 3.6 |
| Gender               |               |     |
| Female               | 2,383         | 67.4|
| Male                 | 1,056         | 29.7|
| Both visible         | 97            | 2.7 |
| Ethnicity            |               |     |
| White                | 2,699         | 85.7|
| Black                | 162           | 4.6 |
| All others           | 338           | 9.7 |
| Number               |               |     |
| Individual selfie    | 3,514         | 61.4|
| Group selfie         | 235           | 4.1 |

Table 2. Tobacco Artifacts and Brands Present in Instagram Images.

| Characteristic                  | No. of photos | %   |
|---------------------------------|---------------|-----|
| Branding                        |               |     |
| Artifact likely has a brand name or logo | 2,299 | 40.2|
| Tobacco artifact                |               |     |
| Cigarette                       | 2,803         | 47.2|
| E-cigarette or other vaping device | 948  | 16  |
| Vaping liquid                   | 886           | 14.9|
| Tobacco package                 | 357           | 6   |
| Hookah                          | 140           | 2.4 |
| None                            | 590           | 10.3|

Table 3. Smoke Imagery in Instagram Photographs.

| Characteristic | No. of photos | %  |
|----------------|---------------|----|
| Smoke play     |               |    |
| Smoking or vaping | 3,430     | 60 |
| Smoke play or vape play | 894     | 16 |
| Marijuana      | 584           | 10.2|
| Anti-smoking message | 108     | 1.9|

Discussion

In this exploratory study, the results indicate that smoking selfies are prevalent and widely shared across the Instagram platform, which is particularly popular among youth and young adult women. The prevailing sentiment in smoking-related Instagram posts appears to be pro-use and the most common form of smoking image is one of a young White woman smoking a combustible cigarette. Public health professionals should note this gendered social media experience, given that smoking rates for young adult males are higher than for females (Jamal, 2016), but that the smoking presence on Instagram skewed toward young adult women. Greenwood, Perrin, and Duggan (2016) have reported that teenage girls share more on visually oriented platforms like Instagram than boys do, and the same holds true for female adults (Lenhart, 2015). Therefore, even though posts are more common among young women, it does not necessarily reflect higher prevalence of tobacco use. However, when selfies demonstrate smoking behavior, they are easily seen and potentially shared among young adult social networks. Young White women in particular, who are establishing their social media personas, may be inadvertently encouraging and reinforcing pro-smoking norms, with potential to influence the uptake or maintenance of smoking behavior (Rivis & Sheeran, 2003). The prevalence and glamorization of such images may serve to counteract recent public health gains toward de-normalizing tobacco use, particularly in groups who may not be considered health disparate. Tobacco companies are likely exploiting this gendered selfie norms through under-the-radar advertising that is to the tobacco industry’s benefit only.

These findings imply that Instagram can be a powerful tool for the surveillance of tobacco use. Tobacco brands also appear to be commonly shared in user-generated Instagram posts. This finding has policy implications because brand sharing in the “organically sharing” features of popular image-based social media platforms essentially represents covert, unpaid advertising for the tobacco industry that it would have little interest in curbing. The present study is consistent with other research indicating that the tobacco companies remain a step ahead of tobacco control, subverting advertising restrictions by exploiting Web 2.0 for marketing purposes (Elkin, Thomson, & Wilson, 2010; Freeman, 2012), and offers support for including Instagram and other social media in future policy considerations. Furthermore, very few images were found to promote anti-tobacco sentiments and, given Instagram’s potential (and social media in general) to reach and engage with young smokers, anti-tobacco advocates and public health professionals may be inadvertently overlooking an important opportunity to spread counter-marketing messages.
This study has certain limitations and suggests directions for future research. First, our methodology relied upon Instagram text tags to capture relevant content during data collection. There is risk that some relevant tags may have been omitted, the inclusion of which might have altered the findings. Second, and related to the above, the coding of data was primarily of image-only, and textual content such as hashtags, comments, or emojis were used as supplementary material to clarify ambiguous or unclear imagery. Therefore, the original context of many users’ posts may have been lost (see Highfield & Leaver, 2016). Third, as described in the “Methods” section, we could neither replicate this study under the current API of Instagram nor include examples of photos because of copyright restrictions placed on user content by Instagram’s TOS. Gaining future access to Instagram data presents a challenge which tobacco control must surmount to remain relevant in today’s evolving communications environment. Public policy professionals must inform policymakers on the need to re-open social media to examination, given the ubiquity of the platform to shape and transform the Zeitgeist on a whole range of social norms, ideas, and belief systems, particularly with regard to tobacco and vape use among young adults.

This study offers preliminary evidence that pro-smoking imagery is widely viewed and shared across increasingly popular image-based media platforms such as Instagram. Smoking behavior may become re-normalized as the tobacco industry gains covert and unregulated advertising through this medium. Future research should confirm these results and further explore Instagram’s potential as a surveillance tool to inform behavioral and regulatory science.

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