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“Phantom smokers”: Young cigarillo users who do not identify as smokers

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ABSTRACT

Introduction: Many young consumers of non-cigarette tobacco products, such as cigarillos, do not identify as smokers. These “phantom smokers” tend to underestimate risks to health and feel little urgency to quit. This study examines the prevalence and characteristics of phantom smoker status among young cigarillo users.

Methods: An online survey was conducted among 14–28 year olds who smoke at least 2 cigarillos per week. Phantom smoker status was determined by a negative response to “Do you consider yourself a smoker?” Other variables included smoking frequency, group smoking and sharing, and confidence in ability to quit. Associations between smoker identity and these variables were tested using chi square, independent samples *t*-tests and multivariable logistic regression.

Results: Of 1089 respondents, 242 (22%) were identified as phantom smokers. Phantoms smoked half as many cigarillos per week as identified smokers ($M = 4.75$, $SD = 5.11$ vs. $M = 11.33$, $SD = 0.88$, $p < .001$) and phantoms were more likely to smoke only when sharing (39.7% vs 21.8%, $p < .001$). While 59.5% of identified smokers also smoked cigarettes, only 33.5% of phantoms did so ($p < .001$). Most phantom smokers (83.8%) were unconcerned about addiction. Phantoms also expressed greater confidence in their ability to quit ($M = 4.40$, $SD = 0.98$) than did identified smokers ($M = 3.72$, $SD = 1.25$, $p < .001$).

Conclusions: Despite regular cigarillo use, over 20% of respondents did not identify as smokers. Cigarillo smoking, along with non-daily and shared use, should be routinely assessed among youth. Phantom smokers’ lack of concern about addiction and high confidence in their ability to quit may render conventional messages about smoking risk ineffective.

1. Introduction

Smoking is the top preventable cause of disease and death in the United States (Kann et al., 2016). Although data from the Centers for Disease Control (Jamal et al., 2015) indicate a decline in cigarette consumption of 32.8% between 2000 and 2011, the use of non-cigarette combustible tobacco products, including cigarillos, increased 123.1% during the same period (Tynan et al., 2012). Cigar products, such as cigarillos and traditional cigars, are often perceived as less harmful than cigarettes (Miller et al., 2015), which may increase susceptibility of use (Sterling et al., 2017). However, inhalation of cigar product smoke exposes users to nicotine and harmful toxicants, (Koszewski et al., 2015; Pickworth et al., 2018) posing substantial health risks (Chang et al., 2015).

Young smokers are also increasingly using multiple tobacco products and smoking more intermittently (U.S. Department of Health and

Human Services, 2014). Smoking primarily in social settings has become highly prevalent among young adults (Villanti et al., 2017), with many social smokers categorizing themselves as nonsmokers (Schane et al., 2009). Terms such as “phantom smoker” (Choi et al., 2010; Guillory et al., 2017), “denier” (Berg et al., 2009; Levinson et al., 2007), and “social smoker” (Hoek et al., 2013; Moran et al., 2004; Orpinas et al., 2016) have been used to describe those who engage in intermittent (i.e., non-daily) smoking but who do not necessarily view themselves as smokers. Phantom smokers typically discount the health consequences of smoking (Levinson et al., 2007), are less likely to believe themselves addicted to tobacco (Levinson et al., 2007; Morley et al., 2006), are not receptive to conventional quitting messages (Choi et al., 2010; Falomir and Invernizzi, 1999; Villanti et al., 2017), and are less likely to change their smoking behavior (Moran et al., 2004; Song and Ling, 2011). While intermittent or light smoking may be perceived as less harmful, research has associated it with a variety of serious

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health effects (Schane et al., 2010). The existence of phantom smokers also creates difficulty in assessing smoking prevalence (Guillory et al., 2017).

The authors are not aware of any existing research on phantom smoking among cigarillo users. However, data suggest that cigarillo users share characteristic behaviors with phantom cigarette smokers. Cigarillo smoking appears to be strongly social among both adolescents (Trapl et al., 2017) and adults (Antognoli et al., 2018a) and group use of cigarillo is common, with group members often taking puffs from the same cigarillo (Antognoli et al., 2018b; Jolly, 2008). Cigar product smokers, including cigarillo smokers, are comparatively much likelier than cigarette smokers to not smoke daily (Corey et al., 2018). Finally, the common perception of cigarillos as less harmful to health than cigarettes (Miller et al., 2015; Stephens et al., 2015) may increase likelihood of phantom prevalence among cigarillo users.

The goal of this study is to describe the prevalence of phantom smoking among adolescent and young adult cigarillo users and to evaluate characteristics associated with smoking identity. In order to describe specific behavior and avoid negative connotations of denial (purposeful or otherwise), participants in this study are referred to as either “identified smokers” who smoke and self-identify as smokers, or “phantom smokers,” who smoke but do not self-apply the smoker label. We hypothesize that phantom smokers will be significantly represented among cigarillos users and will exhibit the following traits compared to those who self-identify as smokers:

- 1 Phantom smokers will smoke less overall.
- 2 Phantom smokers will be more likely to share products when smoking.
- 3 Phantom smokers will be less concerned about the possibility of addiction.
- 4 Phantom smokers will be more confident that they can quit but be less likely to have actually made a quit attempt.

2. Material and methods

2.1. Participants

Participants were recruited primarily through advertisements on Facebook, Twitter, and Instagram. These were delivered to users whose profiles or activity referenced keywords such as “cigar” or “smoking” in 10 zip codes in cities or counties identified as having relatively high prevalence of cigar product use (Kann et al., 2016). Advertisement links directed potential participants to a screener survey which assessed eligibility, defined as being aged 14–28 and smoking at least two cigarillos per week. This age range was selected due to the significance of early smoking for future smoking habits (Richardson et al., 2014) and the prevalence of cigar product use among teens (Arrazola et al., 2015) and young adults (Kasza et al., 2017). Because cigarillos are often shared with a group and individual users tend to not smoke an entire cigarillo in one session (Antognoli et al., 2018a), a low threshold for current cigarillo smoking was used.

Eligible individuals were sent a link to the main survey. Surveys were administered via the Qualtrics Survey Platform (Qualtrics, 2018) and were accessible through web browsers on smart phones, computers, or tablets. Case Western Reserve University’s IRB approved survey items and recruitment procedure. Participants gave informed consent before taking the survey.

2.2. Measures

Data was collected as part of a larger study on users of cigar products. Participants who answered “no” to the question “Do you consider yourself a smoker?” (Choi et al., 2010; Levinson et al., 2007) were categorized as “phantom smokers,” while those who answered “yes” were categorized as “identified smokers.” Participants provided

information on their gender identity, race, and age. Usage frequency of cigarillos, cigarettes, and usage context was assessed using items based on the Timeline Followback method (Sobell and Sobell, 1992). These items asked participants about whether they smoked alone or in group settings, typical group size, how many tobacco products they typically consumed each day of the week, and whether or not smoke from these products was inhaled.

Data were collected on participants’ perception of their own addiction and whether or not they inhaled. Items to measure these dimensions were developed from measures used for intermittent smokers and in smoker identity studies (Falomir and Invernizzi, 1999; Van Den Putte et al., 2005; Waters et al., 2006). Participants were asked “Are you concerned about becoming addicted to smoking?” and could respond with “yes,” “no,” or state that they were already addicted. Participants also reported whether they perceived cigar products as better, worse, or about the same for their health as cigarettes.

Finally, participants answered questions about quitting. They were asked if they had ever stopped smoking cigarillos for 24 h or more in an attempt to quit (National Institutes of Health and Food and Drug Administration, 2016). Participants were asked about their intention to quit in the next year. They also rated their level of confidence in their ability to quit smoking cigarillos on a 5-point Likert-type scale ranging from “not at all” to “very much.”

2.3. Analyses

Descriptive statistics were calculated and reported for the prevalence of phantom smoker status and demographic characteristics. The demographic characteristics, patterns of use of tobacco products, perceptions of addiction risk and addiction concern, and quitting-related behaviors, beliefs, and intentions of phantom smokers were compared to those of self-identified smokers using chi square tests and independent samples *t* tests adjusted for unequal variances if necessary. Statistical significance was evaluated with $p < 0.05$. A multivariable logistic regression model was used to examine the independent associations between phantom smoker status and participant demographics, product use behaviors, perceived risk and addiction concern, and quitting-related variables.

3. Results

Overall, 242 (22.2%) cigarillo users were identified as phantom smokers. As shown in Table 1, phantom smokers were more likely to be white and male. Age was not significantly associated with phantom smoker identity.

Table 2 shows the bivariate associations of phantom smoking status and relevant tobacco use behaviors and beliefs. Phantoms smoked significantly fewer cigarillos on average per week ($M = 4.75$, $SD = 5.11$) compared to identified smokers ($M = 11.33$, $SD = 10.88$; $p < .001$). Phantom smokers were more likely to smoke exclusively by sharing cigarillos in a group (39.7%) than were identified smokers (21.8%). Among identified smokers, 81.7% reported mainly inhaling smoke compared to 59.9% of phantom smokers. Using both cigarillos and cigarettes was more common among identified smokers (59.5%) than among phantoms (33.5%).

Proportionately more phantom smokers than identified smokers endorsed the notion that cigar products pose a lesser health risk than do cigarettes (24.4% vs. 12.5%). Identified smokers were nearly evenly split between those reporting not being worried about addiction (46%) and being already addicted (40.9%). In comparison, phantom smokers were overwhelmingly unconcerned about addiction to smoking (83.8%), and only 1.2% reported that they were already addicted.

Identified smokers were significantly more likely to have ever tried to quit (52.3% vs 26.9%, $p < .001$). Identified and phantom smokers reported similar intentions to quit smoking cigarillos in the next year (42.3% vs 38.4%). Identified smokers were significantly less confident

Table 1
Participant Characteristics: Overall and by Phantom Smoker Status.

	Overall Sample (N = 1089)		Phantom Smokers (n = 242)		Identified Smokers (n = 847)		Phantom vs. Identified Smoker Comparison
	n	%	n	%	n	%	
Race/Ethnicity^a							$\chi^2(3) = 28.46, p < .001$
White	436	40.1%	129	53.5%	307	36.3%	
Black	335	30.8%	53	22.0%	282	33.3%	
Hispanic	196	18.0%	29	12.0%	167	19.7%	
Other	120	11.0%	30	12.4%	90	10.6%	
Gender							$\chi^2(2) = 6.03, p = .049$
Female	568	52.2%	97	40.1%	412	48.6%	
Male	509	46.7%	141	58.3%	427	50.4%	
Other	12	1.1%	4	1.7%	8	0.9%	
Age							$\chi^2(2) = 2.57, p = .277$
Young adolescent (14-17)	19	1.7%	6	2.5%	13	1.5%	
Older adolescent (18-20)	231	21.2%	58	24.0%	173	20.4%	
Young adult (21-28)	839	77.0%	178	73.6%	661	78.0%	

^a Missing data n = 2.

in their ability to quit than phantoms.

Table 3 presents the results of the multivariable logistic regression model of phantom smoker status. The overall model was statistically significant, $\chi^2(13) = 339.06, p < .001$, and the Nagelkerke pseudo-R² was .41. Testing revealed no concerns with multicollinearity (all VIF values < 1.60). In the multivariable model, gender was no longer associated with phantom status. Consistent with the bivariate results, the odds of Blacks (OR = 0.38 [0.24, 0.61]) and Hispanics (OR = 0.40 [0.24, 0.67]) being phantom smokers were significantly lower than those of Whites. With the exception of shared cigarillo use, all product use behaviors (average weekly cigarillo use, inhaling vs. puffing, and use of cigarettes) remained significant and all behaviors were associated with reduced odds of being a phantom smoker. Although perceiving cigars as less risky than cigarettes were no longer independently associated with phantom status, smoking addiction concern remained significant. Specifically, those who said they were already addicted to smoking had markedly lower odds of being a phantom smoker compared to those who said they were not concerned about becoming

addicted (OR = 0.03, [0.10, 0.11]). The two quitting-related variables remained significant. Having ever quit using cigarillos was associated with reduced odds of being a phantom smoker (OR = .62 [0.41, 0.94]). Additionally, each 1-point increase on the quitting confidence scale was associated with 21% greater odds of being a phantom smoker (OR = 1.21 [1.01, 1.44]). The overall classification accuracy of the model was 82.0%. The model correctly classified the majority of identified smokers (93.6%) but only 41.3% of phantom smokers, suggesting that additional factors likely distinguish phantom smokers from identified smokers.

4. Discussion

In the current study, 22.2% of active cigarillo users did not identify themselves as smokers. Cigarillo phantom smokers were found to exhibit many of the characteristic behaviors of cigarette phantom smokers: smoking less frequently and in smaller amounts than identified smokers and were less concerned about addiction. Gender was not

Table 2
Product Use Behaviors, Perceived Risk and Addiction Concern, and Quitting: Overall and by Phantom Smoker Status.

	Overall Sample (N = 1089)		Phantom Smokers (n = 242, 22.2%)		Identified Smokers (n = 847, 77.8%)		Phantom vs. Identified Smoker Comparison
	n	%	n	%	n	%	
Product Use Behaviors							
# Cigarillos smoked per week ^a	M = 9.87	SD = 10.26	M = 4.75	SD = 5.11	M = 11.33	SD = 10.88	t(859) = 13.22, p < .001
Only shared cigarillo use	281	25.8%	96	39.7%	185	21.8%	$\chi^2(1) = 31.24, p < .001$
Mainly inhale cigarillos (vs. puff) ^b	834	76.9%	145	59.9%	689	81.7%	$\chi^2(1) = 50.32, p < .001$
Also smokes cigarettes	585	53.7%	81	33.5%	504	59.5%	$\chi^2(1) = 51.31, p < .001$
Perceived Risk & Addiction Concern							
Cigars products less risky than cigarettes ^c	165	15.2%	59	24.4%	106	12.5%	$\chi^2(1) = 20.54, p < .001$
Smoking Addiction Concern ^d							$\chi^2(2) = 141.41, p < .001$
Not concerned	592	54.4%	202	83.8%	390	46.0%	
Yes, concerned	147	13.5%	36	14.9%	111	13.1%	
Already addicted	349	32.0%	3	1.2%	346	40.9%	
Cigarillo Quitting							
Ever quit	508	46.6%	65	26.9%	443	52.3%	$\chi^2(1) = 48.96, p < .001$
Intent to quit in the next year	451	41.4%	93	38.4%	358	42.3%	$\chi^2(1) = 1.14, p = .285$
Quit confidence (1-5, 5 = high)	M = 3.88	SD = 1.23	M = 4.44	SD = 0.98	M = 3.72	SD = 1.25	t(490) = -9.47, p < .001

^a Cigarillos per week calculated by adding the number of cigarillos smoked alone to the number of cigarillos smoked in a group divided by the number of sharers.

^b Missing data n = 4.

^c Missing data n = 1.

^d Missing data n = 1.

Table 3
Phantom Smoker Identity Regressed on Demographics, Product Use Behaviors, Perceived Risk and Addiction Concern, and Quitting-Related Variables ($N = 1081$).

	<i>b</i>	(SE)	OR	[OR 95% CI]	P value
Constant	0.38	(0.51)	1.46		.458
Demographics					
Male (ref = Female & Other)	0.02	(0.19)	1.02	[0.71, 1.47]	.902
Under 21 (ref = Age 21 or over)	0.01	(0.20)	1.01	[0.68, 1.49]	.966
Race/Ethnicity (ref = White)					
Black	-0.96	(0.24)	0.38	[0.24, 0.61]	< .001
Hispanic	-0.92	(0.27)	0.40	[0.24, 0.67]	.001
Other	-0.39	(0.29)	0.68	[0.39, 1.19]	.177
Product Use Behaviors					
# Cigarillos smoked per week	-0.10	(0.02)	0.91	[0.87, 0.94]	< .001
Only shared cigarillo use	-0.24	(0.21)	0.79	[0.52, 1.20]	.260
Mainly inhales cigarillos (vs. puffing)	-0.40	(0.20)	0.67	[0.46, 0.99]	.042
Also smokes cigarettes	-0.82	(0.19)	0.44	[0.30, 0.64]	< .001
Perceived Risk & Addiction Concern					
Cigar products less risky than cigarettes	.26	(0.23)	1.29	[0.82, 2.04]	.268
Smoking Addiction Concern (ref = No)					
Yes, concerned	-0.12	(0.24)	0.88	[0.55, 1.42]	.604
Already addicted	-3.41	(0.60)	0.03	[0.10, 0.11]	< .001
Cigarillo Quitting					
Ever quit	-0.47	(0.21)	0.62	[0.41, 0.94]	.024
Intent to quit in the next year	0.07	(0.19)	1.07	[0.74, 1.55]	.720
Quit confidence (1-5, 5 = high)	0.19	(0.09)	1.21	[1.01, 1.44]	.036

Note. $N = 1081$ due to listwise deletion of missing data.

associated with phantom smoker identity and whites were more likely than Black or Hispanic participants to be phantom smokers.

Prevalence estimates of phantom smoking among cigarette smokers have ranged from 29.6% to as high as 50.7% (Berg et al., 2009; Choi et al., 2010; Guillory et al., 2017), comparatively higher than this sample. Sample recruitment methods may account for some of this difference. Prior studies have used convenience samples recruited from college courses or bars (Choi et al., 2010; Guillory et al., 2017), whereas participants for the current study were recruited from social media profiles that referenced cigars or smoking. Additionally, by requiring participants to smoke at least 2 cigarillos per week, this study may have underestimated the prevalence of phantom cigarillo smokers. As this is the first known study to document the existence of phantom cigarillo smokers, additional studies are needed to establish reliable prevalence estimates.

In this study, 39.7% of phantom smokers only smoked while sharing with others, compared to 21.8% of identified smokers. This finding is consistent with studies that suggest denial of smoker identity is more prevalent in social or intermittent smokers (Debevec and Diamond, 2012; Hoek et al., 2013). However, in the multivariable model, smoking cigarillos only when sharing was not independently associated with phantom smoker status. This finding is surprising, given the significance of social smoking for phantom smoker identity among cigarette phantoms. It is possible that due to the ubiquity of social cigarillo smoking (Antognoli et al., 2018b) use with others is less relevant to cigarillo users' smoker identity. An implication of this finding is that differing usage norms across alternative tobacco products may have differing significance for identity. Further study of the relationship between smoker identity and social usage norms among users of non-cigarette tobacco products such as cigarillos is warranted.

Compared to identified smokers, phantoms were not as concerned about addiction and were less likely to have tried to quit. However, phantoms also expressed considerably higher confidence in their ability to quit. Due to phantom smokers' tendency to view conventional cessation messages as inapplicable to them (Falomir and Invernizzi, 1999; Villanti et al., 2017), specialized or purposefully-designed messaging may be necessary to effectively curb tobacco consumption. Additionally, phantom smokers were twice as likely to report that cigars were better for their health than cigarettes. This finding was consistent

with research showing that many tobacco consumers tend to view their product of choice as "safer" or "healthier" (Agaku et al., 2018) and that phantoms may downplay or not comprehend the health risks brought about by smoking (Levinson et al., 2007). Like most young people, the smokers in this study may be unrealistically optimistic about their health (Weinstein, 1980). This finding may also have relevance to quitting, as switching to a perceived "healthier" product has been associated with lowered likelihood of quitting (Haddock et al., 2004). Tobacco cessation messaging should therefore be designed to inform phantom smokers about the health risks and addictiveness of sporadic or social smoking.

Findings from this study and others (Levinson et al., 2007) suggest that specific questions about tobacco consumption may yield more accurate results than simply asking "Are you a smoker?" Use of cigar products is often misreported, likely because of the wide variation in terminology used to refer to the various types of cigar (Dickinson et al., 2016). Requesting specific information regarding the use of all tobacco products, smoking frequency, intensity, and social contexts would enable researchers to collect data on smokers' behavior regardless of smoker identity. More granular identity data in conjunction with behavioral tobacco use data may also be informative. As behaviors and perceptions about tobacco vary, assessments of tobacco use could allow respondents more flexibility in describing their smoking identity, for example, as "social," "occasional," "non," or "ex-smokers" (Morley et al., 2006; Villanti et al., 2017).

This study found that those who smoked cigarettes in addition to cigarillos were significantly more likely to identify as smokers. Anti-tobacco campaigns have successfully raised public awareness of the dangers of cigarettes, but a side effect may be that the terms "smoker" and "smoking" have become conceptually linked specifically to cigarettes rather than tobacco use in general. Due to cigarillos often not being directly addressed in anti-tobacco messaging (Jolly, 2008), there is evidence that the undesirable aspects of cigarettes, such as negative health effects and social stigma, are not necessarily viewed as being applicable to cigar products (Miller et al., 2015). This dearth of cigarillo-focused messaging may allow cigarillo smokers to more easily assume a non-smoker identity.

Given the age range surveyed, it is possible that phantom smoking is a transitory identity that passes as the smoking habit solidifies or fails to

solidify in adulthood. Smoker identity and smoking can escalate together, with the relationship becoming stronger over time (Hertel and Mermelstein, 2012) and while college-aged social smokers commonly expect to quit smoking after leaving that environment, this is often not the case (Moran et al., 2004). This suggests that cigarillo smokers with a strong smoker identity may be more likely to continue to smoke and escalate their smoking. Indeed, the tobacco industry views the transitions during young adulthood as significant in establishing adult smoking behavior, even conducting research on how to cultivate smoking behavior in young smokers (Ling and Glantz, 2002). This transition may also be an opportunity for intervention, as transitory smoking identities have been noted to be of utility for smoking cessation (Vangeli and West, 2012) and occasional smoking has been noted as a possible transitional phase either toward regular smoking or to quitting (Gilpin et al., 1997). Understanding of phantom smoking may provide insights into this transition and help curb adult smoking. It may be useful to demarcate transitory “phases” within longitudinal studies that measure product use patterns or nicotine dependence.

In this sample, identified smokers were significantly likelier to inhale than phantoms. Inhalation appears common among cigarillo smokers (Jolly, 2008), and it is possible that inhaling rather than puffing is a defining behavior for smoker identity. Further research exploring the relationship between identity, inhalation, and puffing could help to inform messaging relevant to cigarillo users.

The study was limited to respondents who reported smoking two or more cigarillos per week. “Current use” is often defined as smoking at least once in the last month (Center for Behavioral Health Statistics and Quality, 2016), and the prevalence of phantom smokers who smoke cigarillos at least once a month but less than two cigarillos per week is not known. Because of this cigarillo focused sampling scheme, the findings may not generalize to users of other tobacco products such as large cigars or hookah.

By asking cigarillo smokers whether or not they self-categorized as smokers, this study was able to find that phantom smokers were significantly represented in a diverse sample. It was found that while cigarillo phantoms shared characteristics with cigarette phantoms from other studies, social smoking, one of the primary characteristics of phantom smokers, was not a significant predictor of smoker identity. These findings show that phantom smoking may be widespread among tobacco users, although specific characteristics of users of non-cigarette tobacco products may differ. By collecting data on smoker identity, it may be possible to better understand reported smoking as well as how smokers perceive their own behavior and health prospects. As increasing numbers of young smokers are smoking intermittently and using alternative products to cigarettes, it may be important to incorporate smoker identity into assessments and interventions to more effectively improve the health of a group that rejects traditional smoking labels.

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Contributors

We wish to confirm the contributions of all four authors to the manuscript. Rock Lim conceptualized the project and wrote the bulk of the manuscript. Dr. Karen Ishler also contributed to conceptualization and was the analytical lead on the project. Dr. Erika Trapl contributed to refining the manuscript. Dr. Susan Flocke contributed to data acquisition, interpretation of findings, and drafting the manuscript. All authors read and approved the final manuscript.

Declaration of Competing Interest

No conflict declared.

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