

Original investigation

The Most Natural Tobacco Used: A Qualitative Investigation of Young Adult Smokers' Risk Perceptions of Flavored Little Cigars and Cigarillos

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Abstract

Introduction: Flavored little cigar and cigarillo (LCC) smoking prevalence rate is increasing among young adults; little is known about their comprehension of its risks. To inform tobacco control regulatory policy and prevention methods, we explored young adult smokers' risk perceptions of flavored LCC products and its use.

Methods: Purposive samples ($n = 90$) of African American, Hispanic, and white young adults who self-identified as dual (smoked ≥ 1 LCC and cigarette in past 30 days) and cigarette-only (≥ 1 cigarette in past 30 days) smokers participated in 12 audiotaped focus groups and a semi-structured interview conducted in the Southeastern United States. Participants discussed their experiences smoking flavored LCCs and perceived health risks of smoking flavored LCCs. A brief survey was administered to characterize participants.

Results: The participants had a mean age of 25.1 years ($SD = 4.5$), were majority male (53.1%), and were 60.0% African American, 29.5% white, and 17.5% Hispanic. Along with health risks and addiction, three major themes emerged as underlying contributors of risk perceptions: affect, participants' smoking practices (amount smoked and inhalation), and beliefs about the components of LCCs (including flavoring and filters). Participants' reported intention to smoke flavored LCCs with its tobacco or as blunts (filled with marijuana) also influenced perceptions. Flavored LCCs were viewed along a continuum of risks compared to cigarettes and blunt smoking.

Conclusions: Our study revealed dimensions that were important for the formation of risk perceptions about flavored LCCs. A multidimensional conceptual model and a measure of risk perceptions that is inclusive of these dimensions should be developed and examined for LCC use patterns.

Introduction

Flavored little cigars and cigarillos (LCCs) are not currently regulated by the US Food and Drug Administration (FDA). Subsequently their sales have grown tremendously in the United States. According to Nielsen Scantrack data, cigar dollar sales in convenience stores increased by 30% between 2008–2011.¹

Flavored LCCs are the major contributors to the increased sales,¹ and are growing at an alarming rate among young smokers. Over 70% of US young adult current cigar smokers reported using cigarillos, while 12.8% reported smoking little filtered cigars in 2012–2013.² Females, African Americans, and young adults with prior cigarette smoking history have elevated risks of LCC smoking.^{3–5}

While the marketing and consumption of LCCs among young adults continue,³ young adults' perception of their risks are understudied. Risk perceptions are proximal predictors of smoking and quitting behavior^{6,7} and are critically important to understand for LCC use. Prior studies show that young adults generally endorse low perceived risks of LCCs, with many reporting that any cigar use (including LCCs) is less harmful than cigarette use.^{5,8-10} Young adults believe that cigar smoking is more "natural" and less likely to cause addiction than cigarettes,¹⁰ and that it has a minimal role in cancer causation.⁹ Although important for the field, these early indicators provide little insight as to how young adults form perceptions of risks about flavored LCCs.

Slovic's risk perception research suggests that young smokers give very little conscious thought to risk. Though aware that smoking causes some amount of harm, young smokers have very limited and often unrealistic knowledge of the risks and consequences of smoking. For example, though most are aware that smoking causes cancer, many young smokers have not been diagnosed with cancer themselves. As such, they are often unable to weigh the consequences of cancer (ie, treatment, quality of life) in their decision to smoke. Rather, their risk decisions are motivated by affect (ie, positive or negative evaluative feelings toward smoking) instead of an analysis of facts and consequences.¹¹ Slovic's theory is consistent with studies that suggest that young adult smokers report affective reasons for smoking LCCs (ie, fun to smoke) and that they have superficial knowledge of the dangers of LCC smoking (ie, less harmful than cigarettes).^{10,12,13} Recently, we documented young adults' affect for flavored LCCs and its influence their smoking behavior.¹⁴

The FDA has proposed to deem LCCs under its tobacco product authorities¹⁵ and is seeking research to understand consumers' perception of flavored LCCs to inform future regulatory actions. Using Slovic's risk perception theory as a conceptual framework, we conducted focus groups with young adult smokers to assess their perception of risk about flavored LCCs compared to cigarettes. Prior studies suggest that experiences with LCC smoking may differ by racial and ethnic group, gender, and smoking status. We stratified by racial and ethnic group (African American, white, and Hispanic), gender (male and female), and smoking status to ensure the perspective of these groups were documented in our findings. Data obtained from this study will be used to develop a multidimensional measure of risk perceptions that will be tested on a national survey.

Methods

Overview of the Study

Data presented in this article are a part of a study that seeks to assess the association between risk perceptions of flavored LCC use and susceptibility of use among multiethnic young adult smokers. The study was approved by the Institutional Review Board of Georgia State University.

Participants

Purposive sampling was used to recruit past 30-day dual (smoking ≥ 1 LCC + cigarette) and cigarette-only smokers (smoking ≥ 1 cigarette) to participate in 12 focus groups and a semi-structured interview in the Southeastern United States. Inclusion criteria included: (1) being aged 18–34 years old, (2) identifying as African American, Hispanic, or white, and (3) reading and speaking English. Cigarette-only smokers who had a history of LCC smoking were not excluded from the study. Nonsmokers and those who exclusively used

e-cigarettes were excluded from the study. We recruited participants through paid internet-based advertisements on <http://Craigslis.org> and Facebook; flyers posted strategically at community venues where young adults gathered; and word of mouth. Prospective participants were informed that we sought to learn about flavored LCC smoking and that participation would include a 2-hour focus group interview for which they would receive \$40 as compensation. Prospective participants were screened and, if eligible, enrolled in the study via telephone by trained research staff.

Study Procedures

The study was conducted from April to June in 2014. After written informed consent was obtained, participants completed a brief survey that was used to characterize them and cross-validate focus group findings. The brief survey was administered prior to the focus groups and assessed demographic characteristics and LCC, cigarette, and marijuana use. Additional details about the brief survey measures can be found elsewhere.¹⁴ Standard focus group procedures were followed.¹⁶ The focus groups were moderated by trained research staff and a note taker captured major themes from each group. All sessions were digitally audio-recorded and professionally transcribed.

Sample Description

Though participants self-identified as either past 30-day dual or cigarette-only smokers at enrollment, many reported another smoking status on the brief survey. Of the 90 young adult focus group participants, 64.4% reported LCC-only smoking, 27.8% were reported dual smoking, and 7.8% reported cigarette-only smoking in the past 30-days prior to the focus groups. Overall, participants were aged 25.1 years and were majority male and African American (Table 1). Additional participant smoking characteristics are described in detail elsewhere.¹⁴

Focus Group Discussions

Slovic's risk perception theory guided the development of the focus group moderator's guide. Major themes reported in this article include participants' perception of risks, affect for flavored LCCs, and their knowledge about the consequences of flavored LCC smoking. The themes were explored in all focus groups. Several flavored LCC brands, such as Black & Mild and Swisher Sweets, were available at each focus group to facilitate discussion.

Analysis

The survey data were analyzed using descriptive frequencies (eg, percentages, means) in SPSS 22.¹⁷ The focus group audiotapes were transcribed verbatim. Each transcript was checked for accuracy against the digital recordings and notes by the research team. Study codes, from which the major themes emerged, were created using a deductive process, where Slovic's theory of risk perception and extant evidence on flavored LCC smoking guided their development. The emergence of new codes was allowed, however. To ensure intercoder reliability, two researchers coded each transcript independently and reviewed and discussed their codes. In the event of discrepancies, the data were discussed and coded after consensus was achieved.

A thematic content analysis was conducted, where descriptions of the study codes were made across subgroups to identify themes related to risk perceptions.¹⁸ Comparisons of the risk perception code by the affect and knowledge codes were conducted to examine the applicability of Slovic's theory to the data. Data were organized and managed using NVivo 10.¹⁹ Findings are reported by participants'

Table 1. Participant Demographic and Smoking Characteristics

Characteristic	LCC-only (N = 58)	P	Cigarette-only (N = 7)	P	Dual (N = 25)	P	Total (N = 90)	P
Age (mean, SD)	25.4 (4.4)		23.7 (2.8)		25.7 (4.5)		25.1 (4.5)	
Sex (%)								
Male	44.8		28.6		48.0		53.1	
Female	55.2		71.4		52.0		46.9	
Race/ethnicity (%) ^a								
African American	82.1	.001	14.3	.01	29.2	.001	47.4	
Hispanic	15.8	.001	0.0		28.0		17.1	
White	16.1		85.7	.001	45.8	.05	35.5	
Age of LCC initiation (mean, SD)	16.1 (3.3)		18.0 (1.8)		15.8 (1.8)		16.2 (2.8)	
First LCC flavored? (%yes)	61.4		57.1		68.0		63.3	
Number of LCCs past 30 days		.001				.05		
0–1 day	10.5		100		8.4		24.5	
2–5 days	17.5		0.0		37.5		19.4	
6–10 days	8.8		0.0		20.8		10.2	
11–20 days	15.8		0.0		4.1		11.2	
21–30 days	47.4		0.0		29.2		34.7	
Number of LCCs per day on days smoked in past 30 days			0.0					
≤1 LCC per day	37.5		0.0		68.0		47.1	
2–5 LCCs per day	42.9		0.0		24.0		37.3	
6–10 LCCs per day	7.1		0.0		4.0		6.0	
≥ 11 LCCs per day	12.5		0.0		4.0		9.6	
Filtered LCC past 30-days	46.3	.001	0.0		28.0	.01	35.8	
Past 30-day LCC flavored	76.4	.001	0.0		88.0	.05	67.7	
Ever LCC with marijuana	84.2		85.7		84.0		82.3	
Past 30-day marijuana	80.4	.01	42.9		72.0		70.8	.05
Intention to continue LCCs (% yes)	85.7	.01	0.0	.001	88.0		74.7	

LCC = little cigar and cigarillo.

^aColumn percentages do not total 100%.

self-reported smoking status at study enrollment (as either dual or cigarette-only smokers).

Results

Perceptions of Risk of Flavored LCCs Compared to Cigarette Smoking

A range of opinions about the risks of smoking flavored LCC compared to cigarettes was expressed. Some participants reported that smoking flavored LCCs were as harmful as smoking cigarettes. An underlying reason for this perception among cigarette-only smokers was the presence of warning labels on flavored LCC and cigarette packages:

I'm going to say both [are harmful]. Because that Surgeon General warning is there for a reason on both packages. (white female cigarette-only smoker)

Yeah, cause at the end of the day-- you still have the Surgeon General's [warning label] (Hispanic male, cigarette smoker)

Young women across racial and ethnic groups specifically referred to the similarity in addiction and health risks, whereas young men generally reported that "all tobacco is the same". Some young men also described the similarities of LCCs and cigarettes, noting that smoking "tipped LCCs are just like smoking cigarettes".

Still others perceived that smoking flavored LCCs were less risky than cigarette smoking. When examining this perception across racial and ethnic groups and smoking status, some African Americans (male dual and both cigarette smoking groups) described

the risks related to addiction and health effects. These participants described how flavored LCCs were less addictive and less likely to cause chronic diseases such as cancer:

They're better to smoke than a cigarette and then the nicotine and all the stuff that are in cigarettes. I think the cigarillos are healthier. (African American female cigarette only smoker)

Hispanic dual smokers across gender held similar views, and in their discussions described the ease of quitting LCCs compared to cigarette smoking:

Participant 1: LCCs are better than cigarettes. Cigarettes are very addictive.

Participant 2: Oh yeah, 'cause I can drop this Black and Milds. But the cigarettes, I can't even stop smoking those. (male dual smokers)

White participants who perceived flavored LCCs were less harmful revealed that one's smoking pattern and the type of LCC smoked contributed to beliefs. Some white male cigarette-only smokers explained that smoking flavored LCCs was less harmful than cigarettes because there are fewer in a pack to smoke, resulting in reduced smoking intensity:

Participant 1: When people buy a pack of cigarettes more than likely they'll smoke more than one so that may be more dangerous than one Black & Mild."

Participant 2: It's [Black & Mild] actually good for your health in small quantities.

Others implied that inhalation affected the degree of harm one may experience, either by reducing or increasing risk:

I think it all goes back to if you're inhaling a cigar or you're smoking a cigarette, cause no one really smokes cigarettes and doesn't inhale. And so if you're smoking a cigar -- had a full pack of cigarettes today and you inhale every single cigarette and if you smoke say two Black & Milds a day and you're not even inhaling it, I think cigarettes would be a big risk. (White male cigarette-only smoker)

Some white female cigarette-only smokers also acknowledged that filtered flavored LCCs were less harmful to smoke than cigarettes, stating that they were of better quality than cigarettes. The "naturalness" of the flavored LCC tobacco also contributed to perceptions of reduced harm. Package images that portrayed flavored tobacco influenced white female smokers' perceptions of "naturalness" and safety of LCCs:

Participant 1: ...also the flavors they put the fruits there...people might assume that it's okay it's got fruits on it, cause this one's even got a picture of a fruit all cut up and it looks good. So, they're associating it with the natural

Participant 2: When I think of like little cigars, I think of the most natural tobacco used because most of the stuff I see has like byproducts on it and everything, especially the regular cigarettes, but you don't see it as much on the little cigars.

Participants across all groups who perceived LCCs were less harmful also made analogies to innocuous items, such as food or alcohol:

Just eye-catching, flavorful. When I see them I kind of like think about drinks. Like it says like Peach. I think about like a peach drink. (White male, cigarette smoker)

They taste basically like a strawberry. And I like the Tropical Fusion cause it's like a coconut (African American male cigarette only smoker)

Discussions with Hispanic male dual smokers revealed that the ingredients of LCCs were important indicators of its quality and reduced risk for this group. Many of these smokers implied that any cigar has fewer toxic ingredients than cigarettes:

Participant 1: Cigarettes have a lot of different stuff in them.

Participant 2: Like pesticides.

Participant 3: Yeah, it's homogenized tobacco that they get up off the warehouse floor. And it's addictive stuff in there that make people want to keep buying cigarettes. But one cigar-- cause it's all natural tobacco not that homogenized stuff in a cigarette. One cigarette probably has got more nicotine and cancer causing stuff than probably two or three packs of cigars.

Other participants said flavored LCC smoking is more harmful than cigarette smoking. Several participants across all groups compared the risks of smoking flavored LCCs to that of cigarettes using a ratio:

"Cigarillos are way worst for you. It's like 8 cigarettes in the amount of tobacco and nicotine and tar and all that. It's like 8 cigarettes per 'rillo.'" (white male cigarette-only smoker)

"I heard that one Black & Mild is equivalent to like 5 cigarettes too." (Hispanic female, dual smoker)

"...They say it's [smoking a LCC] like smoking 9 cigarettes." (African-American female cigarette smoker)

Notably, participants across groups also described severe side effects, such as diarrhea, dizziness, headaches, nausea, and vomiting, that occurred when smoking LCCs. African American young

men perceived that the tobacco inside of LCCs was "cheap" or poor quality, whereas the young women reported that cigarettes were not as concentrated or "as strong as LCCs". African American young women also noted that the degree of harm experienced also depended on "how much you smoke them" or one's smoking intensity. Similar to African American females, white females across smoking status said that cigarettes are "lighter to smoke". African American female cigarette only smokers, and white males across smoking status described increased risk in terms of smoking pattern and type of LCC used. These participants said that unfiltered LCCs were harmful to smoke and that inhalation of any LCC smoke is detrimental to one's health.

Intended Use of Flavored LCCs and Perceptions of Risk

An important emerging theme across all focus groups was the manner in which young adults smoked flavored LCCs. When asked what thoughts came to mind when they saw or heard the words "flavored little cigars or cigarillos" during a word association exercise, all groups said "marijuana" or "weed". The participants indicated that some young adults do not smoke LCCs as intended (ie, with only its flavored tobacco). Rather they use flavored LCCs as a device to smoke marijuana:

"Ninety percent of people that I've ever met that wanted to grab a cigarillo, it was because they wanted to do a blunt". (White male cigarette only smoker)

Our participants described how some young adults remove the tobacco and replace it with marijuana or either blend the flavored tobacco and marijuana together in a process called blunting. A few implied that flavored LCCs may be smoked with its tobacco when cigarettes were unavailable, however:

"They probably didn't have a cigarette and they grabbed that. They just wanted nicotine." (African American male dual smoker)

Though most viewed flavored LCCs as devices to smoke marijuana, participants across all groups noted that the Black & Mild brand was the only brand to be smoked as intended:

Participant 1: Yeah, you can smoke Black & Milds as they are, but everything else --

Participant 2: That's their main purpose.

(white male dual smokers).

Moderator: No one smokes Swishers with its tobacco alone but you will smoke Black & Milds with its tobacco.

[All say 'yes'.]

(African American male dual smokers)

Two inductive subgroups emerged during analysis of the intended use theme: young adults who smoked LCCs with tobacco (as intended) and those who smoked LCCs as blunts. Using these inductive subgroups, we examined participants' perception of risk for cigarettes, flavored LCCs with its tobacco, and blunts. A continuum of risk emerged (Figure 1). Compared with cigarettes, blunts were perceived by participants to be the least harmful product to use, while participants perceived that use of LCCs with its tobacco occupied a mid-position between cigarette and blunt smoking (Figure 1).

Perceptions of Risk and Affect for Flavored LCCs

We examined the intersection of risk perception, affect, and knowledge for all groups to assess the applicability of Slovic's theory to our

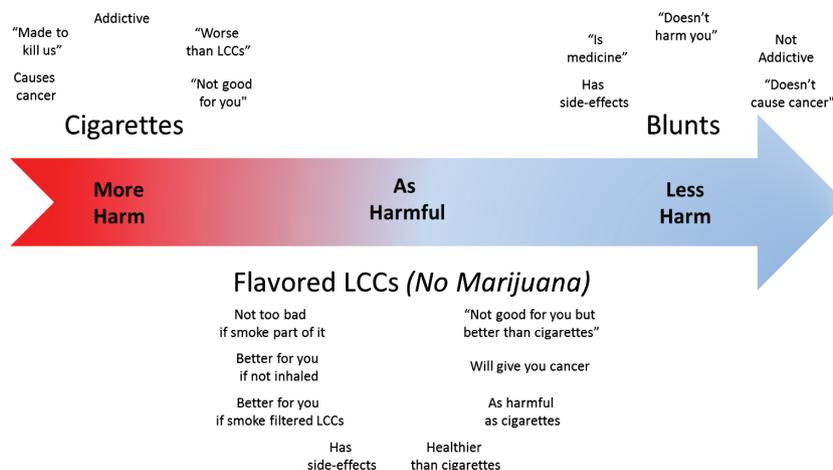


Figure 1. Continuum of Risk Perceptions for Cigarettes, flavored LCCs, and Blunts. *Note:* Phrases in quotation marks emerged from the study participants. All other phrases are researcher-derived from the study data.

data (Table 2). Comparisons were made across all groups for smoking LCCs as intended and as blunts. Positive affective statements and knowledge statements about the “safety” of flavored LCCs with its tobacco were generally associated with perceptions of low or no harm among our participants. Negative affective statements and knowledge statements about the dangers of LCC smoking with its tobacco were linked with perceptions of more harm. Notably, participants held positive affective statements and views about blunt use.

Discussion

Our young adult study participants held varying perceptions of risks about flavored LCCs compared to cigarette smoking. The most concerning was participants’ perception of reduced harm of flavored LCCs (smoked with its tobacco inside) compared to cigarettes. Underlying reasons for reduced harm perceptions included participants’ beliefs about addiction and the health effects associated with LCCs (ie, cancer), the quality of ingredients, participants’ smoking patterns (including smoking intensity and inhalation), and participants’ use of filtered LCCs. Distinctions in the endorsement of the underlying reasons were also found across racial and ethnic groups, gender, and smoking status. Consistent with the research of Slovic and colleagues,^{11,20} perceptions of reduced risk were also influenced by participants’ positive emotions or feelings about smoking flavored LCCs (ie, it is relaxing) and their knowledge about the reduced harms associated with its use. The association among positive affect, knowledge and perceptions of reduced harm was consistent across all groups. Flavoring of the LCC tobacco was also an important contributor to the perception of reduced risk. Particularly, the portrayal of flavors on the LCC product packaging contributed to perceptions of naturalness and safety for some participants. These young adult smokers have been exposed to information that has implied reduced risk of LCC smoking, which has influenced their perceptions of reduced harm. This is troubling, and may lead to an uptake of flavored LCC smoking among nonusers or continued use among current smokers.

Some young adults perceived that smoking flavored LCCs (with its tobacco) was as harmful as cigarette smoking. Addiction, health risks, and acknowledgement that all tobacco products are harmful were common underlying reasons for this perception. Young women

endorsed reasons of addiction and health risks whereas young men endorse the harmfulness of all tobacco products. Notably, some participants referred to the Surgeon General’s warning labels on LCC packages when discussing harm. Though acknowledging warning labels and recognizing some level of risk is encouraging, we are unsure if participants felt personally susceptible to the risks. Baker and colleagues⁹ found that although cigar smokers recognized that smoking caused cancer, they tended to show optimistic bias about their own perceptions of risk, believing that their chances of experiencing cancer are lower than their peers. We are also unsure of participants’ comprehension of the warning labels as they pertained to the risks of LCC smoking.²¹

Moreover, some participants reported that smoking flavored LCCs were more harmful than cigarette smoking. These participants generally expressed emotions such as anxiousness or ambivalence about smoking flavored LCCs and shared facts during discussions about the increased harms associated with its use. Interestingly participants who held this perception described the risks of smoking flavored LCCs to that of cigarettes using a ratio of smoking intensity. There was inconsistency about the threshold of LCCs or cigarettes needed cause harm, and when probed participants were unable to pinpoint the origins of the fact. Flavored LCC smoking patterns, including intensity and inhalation, and use of filtered LCCs also emerged as important contributors of harm perception, notably among African American female cigarette-only smokers and all white male smokers. In this context, participants revealed that smoke inhalation and smoking unfiltered LCCs can increase the harms associated with smoking flavored LCCs. They also acknowledged that one could mitigate the risks associated with flavored LCC smoking by reducing the amount smoked; not inhaling; and smoking filtered LCCs. Our finding is consistent with that of other qualitative studies which reported that inhalation and the amount of cigars smoked influenced perceptions of risk.^{10,22} That some young adult smokers recognized the risks inherent in flavored LCC smoking and were empowered to alter their smoking patterns to reduce the risk is encouraging. As suggested by other studies,¹⁰ these young adults are misinformed about the consequences of LCC smoking and may be utilizing ineffective harm reduction methods, however.

Though an emerging theme, participants’ intended use of flavored LCCs was an important contributor to their perception of

Table 2. Risk Perceptions for Little Cigars and Cigarillos (LCCs) by Affect and Knowledge

Perceptions	Flavored LCCs (without marijuana)		Blunts (LCCs with marijuana inside of them)	
	Affect	Knowledge	Affect	Knowledge
Less harmful	<ul style="list-style-type: none"> • “I wanted to be cool” • Pleasurable • Satisfied • Relaxed • “...felt like I was doing better” • “I’m a baler” when smoking LCCs • “high class...with suits buying these over cigarettes” 	<ul style="list-style-type: none"> • Cigarettes are very addictive; LCCs are not • Safer to smoke compared to cigarettes • LCCs have “natural” tobacco • LCCs will not cause cancer • LCCs are healthier than cigarettes • LCCs have less nicotine than cigarettes 	<ul style="list-style-type: none"> • Relaxed • “Buzzed” or “high” • “Chillin” • Calm • “I can escape” • Satisfied • “Awesome” • “Relieved my stress” • “Sexy” • Doubtful 	<ul style="list-style-type: none"> • “...isn’t as big as like crack or cocaine” • “...can’t catch cancer through smoking weed” • “Weed is better for you” • “There’s a chance that something [harmful] is in that [blunt]” • “Any type of smoke will crystalize in your lungs and have the same effect”
As harmful	<ul style="list-style-type: none"> • Cute • Relaxed • Stress relieved 	<ul style="list-style-type: none"> • “It’s all going to lead to cancer” • “Tobacco is tobacco” • LCC cause the “same addiction” as cigarettes • LCCs are equally as harmful as cigarettes • LCCs are made of cheap ingredients • LCCs cause many side effects (eg, headaches, nausea, vomiting, diarrhea) • Quantification of harm -“1 LCC = 8 cigarettes in nicotine and tar” -“LCCs are 30 times stronger than cigarettes” -“1 Black & Mild = 20 cigarettes” -“1 Black & Mild = 9 cigarettes” • Worry about nicotine content in LCCs 		
More harmful	<ul style="list-style-type: none"> • Uneasy • Did not enjoy • Worried • Concerned 			

Phrases in quotation marks emerged from the study participants. All other phrases are researcher-derived from the study data.

risk. Our participants described two ways in which young adult smokers used flavored LCCs: (1) with its flavored tobacco, as intended and (2) as a blunt (the tobacco removed from the LCC and refilled with marijuana). Consistent with prior qualitative studies,^{9,10,12} our participants perceived that smoking blunts was less harmful than smoking LCCs with tobacco. All participants revealed that marijuana use in any form was “natural” to smoke, and that unlike tobacco, marijuana use was not associated with illnesses or diseases such as cancer. Further, these participants revealed that flavored LCC tobacco and marijuana use combined was safe to smoke and expressed positive feelings (eg, “it relaxes you”) about its use. Though some participants acknowledged the wrapper of the blunt was a tobacco leaf, ironically none considered its use to be harmful. Changes in marijuana policy and legality in the United States, along with tobacco control regulatory policies that have focused on select tobacco products (ie, flavored cigarettes, excluding menthol) may be fueling perceptions that blunt smoking is safer than flavored LCC (as intended) or cigarette smoking. Though our study participants

did not regard the LCC tobacco leaf wrapper in their perceptions of risk, its use may increase risk of short and long term adverse health consequences and nicotine dependence among participants.²³⁻²⁵

Our study is not without limitations. Our focus groups were conducted among a convenience sample of racially and ethnically diverse young adults in the Southeastern United States. Though our findings may not apply to other young adult populations, they shed light on the perceptions of risk about LCCs. Second, we encountered challenges recruiting Hispanic, Spanish-only speaking cigarette-only smokers. We believe that language and our focus group location were barriers that affected the recruitment of Hispanic participants. Additionally, this study was not designed to ascertain differences among subgroups of the Hispanic diaspora. Finally though participants self-identified as either a cigarette-only or dual smoker at enrollment, their actual smoking behavior differed at the time of study and may have implications on the interpretation of our findings.

In conclusion, our study highlights underlying dimensions of risk perceptions among a sample of diverse young adults. Previous

studies of smoking risk perceptions have assessed dimensions such as addiction and health risks. Other dimensions important for the formation of risk perceptions about flavored LCCs that should be considered include affect toward its use, smoking patterns (eg, smoking intensity, duration, inhalation), intended product use (eg, with tobacco or with marijuana), use of filtered tips, perceived quality of product, and tobacco flavoring. Future studies should develop a multidimensional conceptual model and a measure of risk perceptions that is inclusive of these dimensions and test its association with LCC use patterns. Our study findings have implications for the expansion of regulatory action and public health communications about LCC smoking. Flavored LCC package design, LCC components and parts (specifically its flavoring and filtering) and the quantity sold in a package have an impact on consumers' perceptions about LCCs and influence their understanding of the products' contents. The FDA is proposing to deem LCCs under its authority. Once these products are deemed, our results suggest that the FDA make product standards for LCC components, such as filters, tips or mouthpieces, and a standard that restricts characterizing flavors in LCCs to protect the public's health. Finally, future public health education campaigns should seek to provide reliable, factual scientific information about the contents of flavored LCCs and its health hazards. Doing so may reduce the initiation of flavored LCC smoking and protect the public's health.

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Declaration of Interests

None declared.

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KLS conceived the study, obtained study funding, and was responsible for data collection and analysis and manuscript preparation and writing. CSF and PF contributed the study's methodological development and data analysis and interpretation and provided detailed feedback on all manuscript drafts.

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