

ATTITUDES AND RISK PERCEPTIONS TOWARD SMOKING AMONG ADOLESCENTS WHO MODIFY CIGAR PRODUCTS

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Objective: To examine high school youths' perceptions of health risks, and personal and parental attitudes toward cigarette, cigar, and marijuana use among youth who use or modify cigars.

Design: Descriptive cross-sectional study.

Participants: The 2013 Cuyahoga County Youth Risk Behavior Survey used a two-stage cluster sample design to randomly sample public high schools and classrooms. Students in selected classrooms were eligible; 16,855 students completed the survey.

Main Outcome Measures: This study examines the association between risk perceptions of and youths' personal and parental attitudes toward smoking cigarettes, cigars, and marijuana with current use of cigars, cigarillos or little cigars (CCLCs) or modified CCLCs (ie, freaking or blunting).

Results: 23.5% of youth reported current use of CCLCs in some way; 11.0% reported current freaking and 18.5% reported current blunt use. CCLC users tended to be male and Black. Perceiving all smoking behaviors as risky, wrong, or wrong by parents reduced odds of using CCLCs. After multivariate analysis, Blacks had increased odds of using CCLCs if they perceived smoking cigarettes as harmful, which was not found among other race/ethnicity categories. Having parents who believed that smoking CCLCs is wrong increased the odds of youth freaking or blunting among all CCLC users. Odds of blunting was greater for those who believed CCLCs were more risky among all CCLC users.

Conclusions: Findings suggest that CCLC users may think cigars are safer than cigarettes, and that modifiers may think their

INTRODUCTION

Tobacco use among adolescents has been shown to be associated with low perceived risks related to those behaviors. Middle school and high school youth who use cigarettes, e-cigarettes, smokeless tobacco, and hookah or water pipe are more likely to perceive these products to be less harmful¹ and adolescents who perceive cigarettes to be less risky are more likely to initiate smoking cigarettes.² A substantial body of literature has demonstrated that youth and parental attitudes toward alcohol, tobacco, and other drug use are related to youth cigarette use.³⁻⁵ Youth cigarette smoking behavior, as well as smoking intentions and susceptibility, are greater with positive attitudes toward cigarettes.⁵ Parental attitudes have also been shown to be associated with cigarette smoking, with parental disapproval of cigarette smoking offering a protective effect against cigarette smoking behavior.³

use is safer and more in line with their parents' views than non-modified CCLCs. *Ethn Dis.* 2018;28(3):135-144; doi:10.18865/ed.28.3.135

Keywords: Tobacco; Cigars; Adolescents; Freaking; Blunting; Risk Perceptions

Little research, however, has examined risk perceptions of cigars, cigarillos, and little cigars (CCLCs) among adolescents. Initiation of these products is most common during adolescence⁶ and current CCLC use among US high school youth is at 10.3%, comparable to rates of cigarette smoking.⁷ Current literature indicates that adolescents perceive cigars to be less harmful than cigarettes.^{8,9} More is known about the relationship between risk perceptions and use of CCLCs among adults. Adults who use CCLCs are more likely to perceive cigars to be less risky in terms of their relation to cancer¹⁰ and to be safer than cigarettes.¹¹⁻¹³

In our recent research on youth use of CCLCs and cigar product modification, we found that ethnic and racial minorities were more likely to use CCLCs.¹⁴ This is of concern given the potential for CCLCs to contribute to long-term nicotine dependence and the potential to

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exacerbate known tobacco-related cancer disparities.¹⁵ Among CCLC users, youth report modifying cigars in two different ways: 1) freaking, where the product is opened up so that the filter paper or “cancer paper” can be removed^{9,11,16}; and 2) blunting, where the product is opened so that marijuana can be added into the shell with some or none of the tobacco that originally came in the cigar.^{17,18}

While previous research has shown that middle school youth use of CCLCs is associated with youth and parental attitudes toward cigarettes,²⁶ to our knowledge, no research has been conducted on youth and parental perceptions and attitudes about cigar products among modifiers of CCLCs.

These modification processes may affect the perceived risks of CCLCs. Research among adults indicates that adults freak their cigar to make them healthier,¹⁹ and blunts are considered healthier than non-modified cigars,^{13,20} which could be related to a perception that marijuana is a less risky product than tobacco.²¹

Although modified CCLCs are perceived to be less risky, risks associated with tobacco use remain.²² Further, although these modifications are done to CCLCs, almost a third of youth who report engaging in freaking and almost half of those who report blunting do not identify as CCLC users,¹⁴ which may also be associated with risk perceptions.

Given the intersection of cigar and marijuana use among youth who blunt as well as shifting social norms related to marijuana use, risk perceptions of marijuana may also influence tobacco use. Risk perceptions related to smoking marijuana have been decreasing among adolescents,²³ with younger adolescents and males being less likely to perceive smoking marijuana as a great risk.²⁴ Additionally, in a study examining marijuana and tobacco products, marijuana was perceived to be one of the least risky to health, least addictive, and most socially acceptable.²¹ As with tobacco, youth marijuana use and risk perceptions are associated with parental attitudes toward marijuana use. Marijuana users are less likely to perceive social, academic, and physical risks from using marijuana than non-users.^{24,25}

While previous research has shown that middle school youth use of CCLCs is associated with youth and parental attitudes toward cigarettes,²⁶ to our knowledge, no research has been conducted on youth and parental perceptions and attitudes about cigar products among modifiers of CCLCs. Further, as not all youth who report blunting also report marijuana use,¹⁴ additional research is needed to understand how modifiers of CCLCs perceive marijuana

use. To address this gap, this article reports high school adolescents' perceptions of risks, as well as both personal and parental attitudes toward cigarette, cigar, and marijuana use in an urban, Midwest county among CCLC users and non-users. Further, we examine whether adolescents' perceptions and attitudes regarding tobacco and marijuana use vary based on whether they identify as engaging in freaking and blunting behaviors.

METHODS

Data for this study were drawn from the 2013 Cuyahoga County Youth Risk Behavior Survey (CC-YRBS). The survey follows procedures similar to the national YRBS conducted by the Centers for Disease Control and Prevention but is tailored to fit local needs.²⁷ Following CDC protocols, the sampling methodology used a two-stage cluster sample design where public high schools were first randomly sampled and selected for participation using a probability proportionate to size. In the next stage, classrooms were randomly selected, and all students in those classrooms were eligible to participate. The data were weighted to the population of 9th-12th grade students in the county and post-stratified on grade level, sex, race, and geographic location.

Among the 54 eligible high schools, 43 (79.6%) agreed to participate. Of those eligible in the selected schools (n=22,458), a total of 16,855 usable surveys were completed yielding a completion rate of 75.1%. Non-participation was due to student absence on the day

of survey administration or parental or student refusal to participate. Questionnaires were removed from the dataset if they failed quality control standards as established by the CDC.²⁸ The overall response rate was 60%. The study was approved by the Institutional Review Board at Case Western Reserve University.

Measures

Demographic Data

Students were asked to report sex, race, grade level, and family affluence. Two questions assessed race/ethnicity; the first asked whether a student was Hispanic or Latino (yes/no) and the second asked “What is your race?” which allowed students to select one or more responses. Based on student responses to both questions, students were identified as non-Hispanic White, non-Hispanic Black, Hispanic, and other/multiple races.

The Family Affluence Scale (FAS) was used as a proxy for socioeconomic status (SES).²⁹ FAS is calculated based on responses to four questions assessing family car ownership, family computer ownership, having a bedroom for oneself, and number of family vacations in a year. The scale ranges from 0-9 and is categorized as low (0-4), medium (5-6), and high (7-9).

Tobacco and Marijuana Attitudes and Risk Perceptions

Three sets of items were included to assess youth perceptions of cigarette smoking, cigar product use, and smoking marijuana.⁴ Personal attitude was assessed by asking the following questions: “How wrong do you think it is for someone your age

to smoke cigarettes?”; “How wrong do you think it is for someone your age to smoke cigars, little cigars, or flavored cigars?”; and “How wrong do you think it is for someone your age to smoke marijuana?”. Responses ranged from “not at all wrong” (1) to “very wrong” (4) and were dichotomized for analysis as “very wrong” (1) vs all other responses (0).

Parental attitude was assessed with the following items: “How wrong do your parents feel it would be for you to smoke cigarettes?”; “How wrong do your parents feel it would be for you to smoke cigars, cigarillos, little cigars, or flavored cigars?”; “How wrong do your parents feel it would be for you to smoke marijuana?”. Responses ranged from “not at all wrong” (1) to “very wrong” (4) and were dichotomized for analysis as “very wrong” (1) vs all other responses (0). To assess risk perceptions, youth were asked how much they thought young people risked harming themselves, physically or in other ways, if they engaged in the following behaviors: smoke one or more packs of cigarettes a day; smoke cigars, cigarillos, little cigars, or flavored cigars regularly; smoke marijuana regularly. Responses ranged from “no risk” (1) to “great risk” (4) and were dichotomized for analysis as “great risk” (1) vs all other responses (0).

Past 30-day CCLC and Modified CCLC use

Current CCLC use was assessed by asking, “During the past 30 days, on how many days did you smoke cigars, cigarillos, little cigars, or flavored cigars such as Black & Milds, Swisher Sweets, or Phillipies?”

Branded items have been shown to yield greater endorsement among minority youth.^{30,31} Responses were dichotomized as none (0) vs one day or more in the past 30 days (1).

Items to assess cigar modification were developed in collaboration with the Tobacco Research Working Group at Case Western Reserve University, comprising community organizations, neighborhood residents, and academic researchers.

Current freaking of CCLCs was assessed by asking, “During the past 30 days, did you “freak” (champ or tweak) any cigars, cigarillos, little cigars, or flavored cigars?” Responses included “yes”, “no”, and “I have never smoked a cigar.” Responses were dichotomized as yes (1) and ‘no/I have never smoked a cigar’ (0).

Current use of cigars for smoking marijuana (ie, blunt) was assessed by asking “During the past 30 days, did you smoke any cigars, cigarillos, little cigars, or flavored cigars that have marijuana in them (“blunts”)? Responses included “yes”, “no”, and “I have never smoked a cigar”. Responses were dichotomized as yes (1) and ‘no/I have never smoked a cigar’ (0).

Statistical Analyses

Data were analyzed using SPSS v22 complex samples procedures to obtain weighted estimates and account for the complex sampling design.³² Univariate analyses were used to determine demographic characteristics and distribution of perception variables. To explore differences in perceptions by CCLC use status, bivariate analyses were conducted using SPSS complex samples cross-tabulation to provide prevalence

Table 1. Descriptive characteristics: Overall and for current CCLC use, freaking and blunting

	Overall % (95% CI) n=16855	Non-User % (95% CI) n=11636	Current CCLC Use ^a % (95% CI) n= 2551	Current Freaking ^a % (95% CI) n=1652	Current Blunting ^a % (95% CI) n=2598
Sex					
Male	51.5 (50.2, 52.7)	48.4 (46.9, 49.8)	61.7 (59.0, 64.4)	58.0 (54.2, 61.8)	57.2 (54.6, 59.8)
Female	48.5 (47.3, 49.8)	51.6 (50.2, 53.1)	38.3 (35.6, 41.0)	42.0 (38.2, 45.8)	42.8 (40.2, 45.4)
Race					
Black	39.4 (37.7, 41.1)	34.6 (32.8, 36.4)	51.5 (48.2, 54.9)	56.8 (53.1, 60.4)	45.2 (42.1, 48.3)
White	55.4 (53.6, 57.2)	6.4 (58.5, 62.3)	43.1 (39.6, 46.7)	37.4 (33.7, 41.3)	49.5 (46.3, 52.6)
Hispanic	3.3 (2.9, 3.6)	2.9 (2.6, 3.3)	3.4 (2.8, 4.1)	3.7 (2.9, 4.7)	3.4 (2.8, 4.1)
Other/Multiple	2.0 (1.8, 2.2)	2.0 (1.8, 2.3)	1.9 (1.5, 2.5)	2.1 (1.7, 2.7)	2.0 (1.6, 2.4)
Grade level					
9th	27.8 (24.3, 31.6)	29.6 (25.6, 33.8)	20.1 (16.8, 24.0)	22.9 (19.0, 27.4)	21.0 (17.5, 25.0)
10th	25.0 (21.7, 28.5)	25.8 (22.3, 29.8)	21.5 (18.1, 25.4)	22.1 (18.3, 26.4)	22.6 (19.0, 26.6)
11th	23.4 (20.2, 26.9)	23.0 (19.6, 26.8)	24.3 (20.4, 28.8)	24.1 (19.9, 29.0)	26.9 (24.8, 34.7)
12th	23.9 (20.6, 27.5)	21.6 (18.4, 25.2)	34.0 (29.0, 39.4)	30.8 (25.5, 36.7)	29.5 (24.8, 34.7)
Family affluence					
Low	24.3 (23.3, 25.4)	21.4 (20.3, 22.4)	33.5 (30.8, 36.4)	35.4 (31.9, 39.0)	30.2 (27.6, 32.9)
Medium	34.5 (33.4, 35.6)	34.9 (33.6, 36.3)	32.9 (30.0, 35.9)	34.2 (30.7, 38.0)	32.7 (29.9, 35.7)
High	41.2 (39.9, 42.5)	43.7 (42.3, 45.2)	33.6 (30.7, 36.6)	30.4 (27.1, 34.0)	37.1 (34.1, 40.1)
Any cigar use ^b	25.3 (24.0, 26.6)	-	100%	100%	100%
Current CCLC Use	15.2 (14.1, 16.3)	-	100%	67.8 (63.6, 71.8)	51.1 (47.8, 54.3)
Current freaking	11.0 (10.1, 12.0)	-	49.0 (45.2, 52.8)	100%	43.7 (40.6, 46.8)
Current blunt use	18.5 (17.4, 19.7)	-	64.3 (60.7, 67.7)	73.5 (70.2, 76.5)	100%
Current marijuana use	22.9 (21.6, 24.2)	7.2 (6.5, 8.0)	73.5 (70.8, 76.1)	71.4 (68.1, 74.4)	78.4 (75.6, 81.0)
Current cigarette use	10.5 (9.5, 11.5)	3.1 (2.6, 3.7)	42.7 (39.1, 46.3)	38.5 (34.0, 43.2)	32.3 (29.0, 35.8)

CCLC = cigar, cigarillo, or little cigar.

a. Categories are not exclusive.

b. Includes CCLC use, freaking, or blunting.

estimates and 95% CI. SPSS complex samples crosstab produces chi-square and likelihood ratio tests to assess significant differences at $P < .05$.

To assess differences in perception between CCLC users and CCLC modifiers, we created two subsamples for analysis. To assess differences between CCLC users and youth who reported freaking a cigar, we created a subsample that included all youth who responded “yes” to either question. Similarly, to assess differences between CCLC users and youth who reported using a blunt, we created a sub-sample that included all youth who responded “yes” to either question. To explore differences in perceptions by modification status in both subsamples, bivariate analyses

were conducted using SPSS complex samples cross-tabulation to provide prevalence estimates and 95% CI.

Finally, logistic regression was used to identify demographic and perception variables associated with CCLC use overall as well as modification behavior using the complex samples procedures in SPSS. Models were built using variables that were shown to be significantly associated with the outcome behavior in the bivariate analysis.

RESULTS

Demographic and substance use characteristics of the sample are pre-

sented in Table 1. Overall, 25.3% of youth reported current use of CCLCs in any form (unmodified, freaked, blunts); 11.0% reported current freaking and 18.5% reported current blunt use. Use of CCLCs and marijuana far exceeded use of cigarettes in this sample. Youth reporting current use of CCLCs tended to be male and Black; this was similar for youth who reported current freaking. While there was little variation in SES for those who reported CCLC use, youth who reported current freaking tended to be in a lower SES group and youth who reported current blunting tended to be in a higher SES group. All three use categories had high rates of current marijuana

Table 2: Attitudes and risk perceptions overall and among CCLC smokers

	Overall % (95%CI) n=16855	Current CCLC Users ^a % (95%CI) n=2551 ^c	Non-CCLC Users ^b % (95%CI) n=12,860 ^c	OR (95% CI)
Very wrong for someone my age to smoke cigarettes	49.8 (48.0, 51.5)	21.6 (18.9, 24.6)	54.9 (53.1, 56.6)	.23 (.19, .27) ^d
Very wrong for someone my age to smoke cigars	44.7 (42.8, 46.6)	9.4 (7.7, 11.6)	51.5 (49.6, 53.5)	.10 (.08, .12) ^d
Very wrong for someone my age to use marijuana	42.2 (40.4, 44.0)	11.5 (9.6, 13.6)	48.1 (46.1, 50.1)	.14 (.11, .17) ^d
Parents think very wrong to smoke cigarettes	80.0 (78.8, 81.3)	58.1 (54.6, 61.6)	84.8 (83.5, 85.9)	.25 (.21, .30) ^d
Parents think very wrong to smoke cigars	78.0 (76.6, 79.3)	46.3 (42.7, 49.9)	84.1 (82.9, 85.3)	.16, .14, .19) ^d
Parents think very wrong to use marijuana	75.8 (74.5, 77.1)	53.5 (49.9, 57.0)	80.6 (79.3, 81.9)	.28 (.23, .33) ^d
Great risk of harm to smoke a pack of cigarettes	63.5 (62.2, 64.7)	49.7 (46.3, 53.2)	67.1 (65.8, 68.4)	.49 (.42, .56) ^d
Great risk of harm to smoke cigars regularly	51.6 (50.2, 53.0)	26.1 (23.1, 29.3)	57.3 (55.8, 58.8)	.26 (.22, .31) ^d
Great risk of harm to use marijuana regularly	41.9 (40.2, 43.6)	17.1 (14.8, 19.6)	47.4 (45.5, 49.2)	.23 (.19, .28) ^d

CCLC, cigar, cigarillo, or little cigar.

a. Only those who indicated smoking CCLC in the past 30 days.

b. Includes all youth who indicated they did not smoke CCLC, although they may have endorsed freaking and blunting.

c. Sums of two user columns do not equal total due to missing responses on CCLC use item.

d. Significant OR at P<.05.

use, and nearly a third of each use category also smoked cigarettes. A small proportion of non-using youth reported marijuana use (7.2%) and current cigarette smoking (3.1%).

Table 2 provides attitude and risk perceptions for the sample overall and by CCLC use. Generally, less than half of all youth felt that cigarette, CCLCs, or marijuana use was “very wrong” for someone their age. However, over three-quarters reported that their parents would think it was “very wrong” to use these products. Notably, youth reported the greatest perceived risk for cigarettes, followed by CCLCs, with marijuana being endorsed by the fewest number of students as being “very risky” to their health. All nine attitude and risk perception items were significantly associated with CCLC use as shown in Table 2. Having a percep-

tion that smoking cigarettes, smoking CCLCs, or smoking marijuana was “very wrong”, perceived to be “very wrong” by parents, and thought to be “very risky” reduced the odds of a student being a current CCLC user.

Of particular interest in this study was examining whether attitudes and risk perception varied across CCLC users and youth who modified CCLC products (Table 3). When comparing youth who reported freaking CCLCs (“freakers”) with those who used CCLCs but did not freak CCLC (“non-freakers”), freakers were significantly more likely than non-freakers to believe that smoking cigarettes and CCLCs was very wrong for someone their age. Freakers were also more likely to believe that their parents believed it was very wrong to smoke CCLCs compared with non-freakers. Freakers were less likely to believe that

smoking cigarettes would cause great harm compared with non-freakers.

There were several differences when comparing youth who reported current blunt use (“blunters”) with those who used CCLCs but did not blunt (“non-blunters”). Blunters were more likely to believe that smoking cigarettes and CCLCs was very wrong for someone their age, believe that their parents felt that smoking CCLCs was very wrong, and believe that there was great risk of harm of smoking CCLCs. Not surprisingly, blunters were less likely to believe that smoking marijuana was very wrong, that their parents believed smoking marijuana was very wrong, or that there was great risk of harm to regularly smoking marijuana.

When examining demographic characteristics and attitudes and risk perceptions in a multivariable model

Table 3: Attitudes and risk perceptions: Comparing cigar modifiers to non-modifying CCLC users

	Current Freakers % (95%CI) ^a n=1652	Non-Freaking Cigar Users % (95%CI) ^a n=1812	OR (95% CI)	Current Blunters % (95%CI) ^a n=2598	Non-Blunting Cigar Users % (95%CI) ^a n=884	OR (95% CI)
Very wrong for someone my age to smoke cigarettes	26.8 (23.7, 30.2)	20.7 (16.9, 25.0)	1.41 (1.06, 1.86) ^b	30.8 (28.3, 33.6)	20.6 (16.2, 25.9)	1.72 (1.26, 2.34) ^b
Very wrong for someone my age to smoke cigars	15.1 (12.9, 17.7)	9.6 (7.2, 12.8)	1.68 (1.16, 2.43) ^b	19.0 (16.8, 21.4)	9.7 (7.0, 13.4)	2.17 (1.46, 3.21) ^b
Very wrong for someone my age to use marijuana	14.7 (12.3, 17.5)	14.0 (11.0, 17.6)	1.06 (0.75, 1.51)	12.8 (10.8, 15.1)	18.2 (14.4, 22.8)	.66 (.46, .93) ^b
Parents think very wrong to smoke cigarettes	55.4 (51.5, 59.4)	60.2 (54.5, 65.6)	.82 (.61, 1.11)	62.8 (59.6, 65.8)	58.6 (52.0, 64.9)	1.19 (0.88, 1.62)
Parents think very wrong to smoke cigars	52.5 (48.5, 56.4)	43.5 (38.1, 49.0)	1.44 (1.09, 1.89) ^b	58.2 (55.0, 61.3)	44.2 (37.9, 50.6)	1.76 (1.31, 2.35) ^b
Parents think very wrong to use marijuana	51.2 (47.6, 54.9)	55.9 (50.5, 61.2)	.83 (.64, 1.08)	50.5 (47.7, 53.3)	65.9 (59.4, 71.8)	.53 (.39, .71) ^b
Great risk of harm to smoke a pack of cigarettes	44.0 (40.1, 47.9)	51.6 (46.4, 56.7)	.74 (.57, .96) ^b	51.2 (48.2, 54.3)	50.0 (43.6, 56.5)	1.05 (0.79, 1.39)
Great risk of harm to smoke cigars regularly	27.6 (24.5, 31.0)	26.1 (21.9, 30.9)	1.08 (0.80, 1.44)	34.1 (31.3, 37.0)	24.7 (19.5, 30.7)	1.58 (1.13, 2.21) ^b
Great risk of harm to use marijuana regularly	18.9 (16.1, 22.1)	16.7 (13.4, 20.7)	1.16 (0.83, 1.62)	14.7 (12.8, 16.8)	22.9 (18.4, 28.1)	.58 (.42, .80) ^b

CCLC, cigar, cigarillo, or little cigar.

a. Total number of any CCLC users was 4307; sums across categories reflect 843 missing on freaking and 825 missing on blunting.

b. Significant OR at P<.05.

(Table 4), sex, race and ethnicity, grade level, and family SES were associated with current CCLC use as previously demonstrated. While all attitudes and risk perceptions were significantly associated at the bivariate level (Table 2), associations with parental attitude about smoking cigarettes and smoking marijuana were no longer significant. With one exception, all significant associations indicated that attitudes of the behavior being “very wrong” or causing “great risk of harm” reduced the odds of CCLC use. Notably, youth who believed that there was “great risk of harm” in smoking a pack of cigarettes had increased odds of current

CCLC use. Given the change in direction of the effects within the multivariable model, interaction terms were included in the model. We found a significant interaction between race and perceived risk of harm in smoking cigarettes (P=.026) such that perceived risk of harm from smoking a pack of cigarettes increased the odds of CCLC use among Blacks only and was not significant for Whites, Hispanics, or youth of other or multiple races.

When examining freakers compared with non-freaking CCLC users (“non-freakers”), racial and ethnic minority youth were at increased odds of being a freaker compared with White

youth, and high SES youth were at a decreased odds compared with low SES youth. There were no other significant demographic differences. Of the four attitude and perception variables significant in the bivariate analysis, those associations were attenuated for all variables with the exception of parents believing it was very wrong for youth to use cigars, which led to a 1.36 increase in the odds of freaking.

In comparing blunters with non-blunting CCLC users (“non-blunters”), females were at increased odds of being a blunter compared with males, and youth of middle SES were at a decreased odds of being a blunter

Table 4. Multivariable logistic regression: Variables associated with current CCLC use, freaking vs CCLC use, and blunting vs CCLC use

	Current CCLC Use ^a	Freaking vs. CCLC Use ^b	Blunting vs. CCLC Use ^c
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Sex	.61 (.51, .74) ^e	1.25 (.92, 1.69)	1.40 (1.06, 1.85) ^e
Race/ethnicity			
Black	1.82 (1.50, 2.22) ^e	2.26 (1.69, 3.03) ^e	1.23 (.88, 1.73)
Hispanic	1.27 (.95, 1.70)	1.60 (1.03, 2.51) ^e	1.00 (.64, 1.56)
Other/Multiple	1.35 (1.01, 1.81) ^e	1.84 (1.12, 3.02) ^e	1.04 (.51, 2.10)
Grade level			
10th	1.19 (.94, 1.51)	1.02 (.68, 1.55)	1.05 (.69, 1.60)
11th	1.33 (1.04, 1.70) ^e	.93 (.60, 1.44)	.97 (.59, 1.58)
12th	1.74 (1.33, 2.27) ^e	.87 (.57, 1.31)	.66 (.44, .97) ^e
Family affluence			
Medium	.76 (.60, .95) ^e	.76 (.54, 1.07)	.66 (.44, .99) ^e
High	.70 (.55, .88) ^e	.60 (.42, .86) ^e	.74 (.50, 1.11)
Very wrong for someone my age to smoke cigarettes	.88 (.68, 1.15)	.92 (.66, 1.27)	1.46 (.97, 2.20)
Very wrong for someone my age to smoke cigars	.27 (.20, .36) ^e	1.42 (.93, 2.17)	1.68 (.95, 2.97)
Very wrong for someone my age to use marijuana	.48 (.36, .63) ^e	-	.60 (.35, 1.03)
Parents think very wrong to smoke cigarettes	1.28 (.94, 1.75)	-	-
Parents think very wrong to smoke cigars	.30 (.22, .41) ^e	1.36 (1.01, 1.84) ^e	2.25 (1.56, 3.23) ^e
Parents think very wrong to use marijuana	1.12 (.89, 1.42)	-	.32 (.22, .47) ^e
Great risk of harm to smoke a pack of cigarettes	1.26 (1.02, 1.56) ^{d,e}	.76 (.58, 1.00)	-
Great risk of harm to smoke cigars regularly	.52 (.40, .68) ^e	-	2.03 (1.37, 3.00) ^e
Great risk of harm to use marijuana regularly	.66 (.52, .84) ^e	-	.43 (.28, .67) ^e

CCLC, cigar, cigarillo, or little cigar.

a. Includes full sample to predict odds of current CCLC use.

b. Includes current CCLC users and youth who report current freaking to predict odds of freaking.

c. Includes current CCLC users and youth who report current blunting to predict odds of blunting.

d. An interaction was detected between this variable and race/ethnicity such that risk was only significantly associated with increased odds of CCLC use for Blacks.

e. Significant OR at P<.05.

compared with low SES youth. Five of the seven attitude and perception variables significant in the bivariate analysis remained significant in the multivariable analysis. As expected, believing that parents think marijuana is very wrong and believing that regular use of marijuana led to great risk of harm were associated with decreased odds of being a blunter. Youth who reported that their parents thought that smoking

CCLCs was very wrong had significantly greater odds of blunting than those who did not. Similarly, youth who believed that regular smoking of CCLCs led to great risk of harm had greater odds of being a blunter.

DISCUSSION

We believe this is one of the first articles to examine a range of tobacco

and marijuana attitudes and risk perceptions among adolescent CCLC smokers and CCLC modifiers, including youth who freak or blunt cigars. Overall, compared with cigarettes, youth are less likely to believe that CCLC use is wrong for someone their age and are less likely to believe that regular use of CCLCs poses great risk of harm. This finding is not surprising in light of the reductions in cigarette smoking in adolescents that

have been observed nationally over the past two decades⁷ which has been credited to the extensive tobacco control work targeting cigarettes.³³ Moreover, our findings indicate that misperceptions related to the risk of cigars and parent communication may actually increase the odds of modified CCLC use compared with non-modified CCLC use, potentially implying that youth perceive modified CCLCs to be safe and more in line with their parents' values.

Blunters likely do not identify as CCLC smokers or may not consider blunt use to be concurrent tobacco use given their strong attitudes against cigarette and CCLC smoking. Particularly notable is the greater perception of risk of CCLC smoking among blunters despite the fact that blunters, by definition, are made using cigars. Additional research is needed to understand more about those who engage in these modification behaviors and their beliefs and attitudes regarding modification in order to develop interventions that can reach this population who may not believe they are engaging in cigar use, which puts them at risk for nicotine dependence and future tobacco-related cancers.

Many tobacco control campaigns focus on cigarettes and encourage parents to talk with their children about cigarettes and share their non-smoking expectations, which may lead to unclear youth perceptions of parent acceptance of CCLC use if these products are also not discussed. In fact, parents' beliefs about cigarette smoking were not shown to be significantly associated with current CCLC use. However, our results indicate that when youth believe that

their parents think it is very wrong to use cigars, this belief reduces the odds of use, even after accounting for other attitude and risk perceptions. Thus, there is likely to be benefit in encouraging parents to talk with their children about CCLC use and discouraging CCLC use in any form.

Notably, the odds of current CCLC use was differently associated with an adolescent's risk perception of CCLCs by race. Inclusion of interaction terms indicated that the association held only for Black youth; that is, among Black youth, the odds of being

Overall, compared with cigarettes, youth are less likely to believe that CCLC use is wrong for someone their age and are less likely to believe that regular use of CCLCs poses great risk of harm.

a current CCLC smoker was higher for those who believed that there was great risk from smoking cigarettes. Consistent with other literature, this finding may indicate that Black youth consider CCLCs, including modified CCLCs, a healthier alternative for nicotine consumption.^{11,34,35} This perception may be perpetuated by the abundance of cigar product advertising by tobacco companies pervasive in low-income communities

of color.^{36,37} Further, this belief may perpetuate continued use of CCLCs by Black youth, contributing to an increased risk of nicotine dependence and potentially contributing to documented tobacco related disparities among African Americans.¹⁵

Limitations

There are limitations to this study, most notably that this is a cross-sectional study that can only examine association and not causation. This study was limited to one Midwestern urban county with known high rates of CCLC use and lower rates of cigarette use; however the prevalence of CCLC use is similar to other urban school districts.⁷ Additionally, this study did not ask about parental smoking; however, the effect of parental smoking has been shown to be mediated by variables such as the ones we have included in this study.³⁸ Although we used survey items previously used in the literature, it is possible that the complexity of attitudes and risk perceptions across cigarettes, CCLCs, and marijuana is not sufficiently captured with the items that we included. Further, we did not include measures for other non-cigarette tobacco, such as hookah and e-cigarettes, which would provide a broader context for understanding these behaviors. Finally, this survey was conducted in 2013, prior to the legalization of non-combustible medical marijuana in the state of Ohio where the study was conducted. Since that time, issues of legalization have been more prominent, which could affect risk perceptions, particularly as adolescents in states with medical marijuana legalization are less likely to perceive marijuana use as risky.³⁹

CONCLUSIONS

Our study provides a novel examination of the risk perceptions and parental and personal attitudes of youth who smoke and modify CCLCs. More research is necessary to understand the impact of attitudes and risk perceptions, particularly among youth who modify CCLCs, to determine if and how these perceptions can be modified to prevent and reduce youth tobacco use. Importantly, CCLCs should be immediately integrated into current tobacco control strategies to ensure that CCLCs are being clearly identified as a tobacco product that can contribute to nicotine dependence and discouraged by parents so as not to further exacerbate CCLC use among youth.

ACKNOWLEDGMENTS

Special thanks to Jean Frank and her team at the Prevention Research Center for Healthy Neighborhoods at Case Western Reserve University for ensuring that the procedures of the Cuyahoga County Youth Risk Behavior Survey are of the highest quality and more importantly, that the results of our work have an impact on the youth in our community. This work was supported by Cooperative Agreement #1-U48-DP-001930 from the Centers for Disease Control and Prevention and the Ohio Department of Health/Federal Government, Bureau of Child and Family Health Services through the Cuyahoga County Board of Health's Child and Family Health Services Program. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the funders.

CONFLICT OF INTEREST

No conflicts of interest to report.

AUTHOR CONTRIBUTIONS

Research concept and design: Trapl and Koopman Gonzalez; Acquisition of data: Trapl; Data analysis and interpretation: Trapl and Koopman Gonzalez; Manuscript draft: Trapl and Koopman Gonzalez; Statistical ex-

pertise: Trapl; Acquisition of funding: Trapl; Administrative: Trapl; Supervision: Trapl

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Youth Cigar Smoker Risk Perceptions - Trapl and Koopman Gonzalez

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