



Correlates of youth vaping flavor preferences

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ABSTRACT

Among youth who use electronic nicotine delivery systems (ENDS), e-cigarettes are often the first tobacco product tried. Flavor is a common reason for experimentation with e-cigarettes. This study assessed flavor preferences and the choice of ENDS as an initial product among youth by selected demographic characteristics. The analysis sample included 1549 participants who had ever tried ENDS, drawn from a national online survey of youth aged 13–18 in 2017. Fruit was the most common favorite flavor among ENDS users, followed by menthol/mint/wintergreen. Preference for flavor varied by age, sex and racial/ethnic background. ENDS were the tobacco products most likely to be tried first, particularly among participants under age 17. Those who preferred fruit flavor were twice as likely to have tried ENDS first, compared to those with other flavor preferences, while those who preferred menthol/mint/wintergreen flavor were half as likely to have tried ENDS first. Our findings support an association between flavor and ENDS use. Our research supports previous findings indicating that: 1) flavor is one of the primary reasons for experimentation with ENDS among youth; 2) fruit flavor is strongly associated with use of ENDS as the first tobacco product; and 3) preference of fruit flavor varies by age, sex and racial/ethnic background. These findings have relevance for developing targeted messages for specific youth audiences and implications for tobacco regulatory policies. In addition to January 2020 federal regulations, the authors recommend tighter restrictions, specifically that the marketing and sale of all e-cigarette flavors other than tobacco be eliminated.

1. Introduction

Electronic nicotine delivery systems (ENDS), including electronic cigarettes, are devices capable of delivering nicotine and other constituents in an aerosolized form. Studies have reported high rates of e-cigarette awareness among middle school (84.3%) and high school (92.0%) students (Krishnan-Sarin et al., 2015; Barrington-Trimis et al., 2015). According to the 2019 National Youth Tobacco Survey, 27.5% of high school students and 10.5% of middle school students currently use e-cigarettes. More than five million of these students have used e-cigarettes in the past 30 days; nearly one million report using them daily (Cullen et al., 2019; Jamal et al., 2017). More than half (51.2%) of middle school e-cigarette users reported e-cigarettes as the first tobacco product tried (Krishnan-Sarin et al., 2015). Additionally, e-cigarette use was positively correlated with male gender, age, and non-Hispanic White race (Krishnan-Sarin et al., 2015; Jamal et al., 2017; Anand et al.,

2015; Bostean et al., 2015; Morean et al., 2016).

Flavors are one of the top reasons for experimentation with e-cigarettes among youth, in addition to curiosity and peer influence (Audrain-McGovern et al., 2016; Bold et al., 2016; Kong et al., 2015; Zare et al., 2018). Data from the 2019 NYTS showed that, among current e-cigarette users, over 70% of high school students and nearly 60% of middle school students used e-cigarettes with flavorings. The most common flavors were fruit, menthol or mint, and candy, desserts, or other sweets (Cullen et al., 2019). Data from the 2016–2017 Population Assessment of Tobacco and Health (PATH) Study (Wave 4) also showed that 71% of current youth ENDS users said they used ENDS products “because they come in flavors I like.” (Population Assessment of Tobacco and Health) Over 7000 e-liquids are available, with considerable variability regarding concentration of nicotine and flavorings (Barrington-Trimis et al., 2014; Zhu et al., 2014). Studies have typically categorized flavors as tobacco, menthol/mint, fruit, candy, sweet, and

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coffee (Yingst et al., 2017). Use of flavored tobacco products is negatively correlated with age, suggesting higher appeal among younger users (Feirman et al., 2016; Hersey et al., 2006; Oliver et al., 2013; O'Connor et al., 2007; Meier et al., 2016; Rock et al., 2010; Villanti et al., 2013). Flavor preferences differ between high school youth and adult e-cigarette users, according to one study. Specifically, youth indicated preference for fruit, alcohol, and "other" flavorings or that they did not know what flavor they preferred, and adults indicated preference for tobacco, menthol, mint, coffee, and spice flavoring (Morean et al., 2018). Among adults, males are more likely than females to prefer tobacco flavors (Piñeiro et al., 2016).

Use of flavored e-cigarettes by youth can serve as a gateway to using other tobacco products (Trumbo and Harper, 2013; Spindle et al., 2016). The use of flavored e-cigarettes is associated with greater intention to initiate combustible cigarette use compared with use of non-flavored e-cigarettes (58.3% vs 47.4%) (Dai and Hao, 2016).

Although the literature on ENDS use among youth is beginning to provide rich insights, there is limited research focusing on ENDS use in vulnerable populations, specifically racial and ethnic minority youth, with regard to flavor preference and how it is related to the decision of trying ENDS (ENDS initiation) as the first tobacco product used. Thus, the objective of this study was to increase understanding of the role of flavor preferences as related to ENDS initiation among vulnerable teenage populations and the risk factors associated with this behavior. We hypothesized that flavor preferences are associated with ENDS initiation, and that this association varies by age, sex, and race/ethnicity.

2. Methods

2.1. Sample

From August to October 2017, researchers conducted a quantitative online survey with a U.S. sample of youth aged 13–18. The online approach provided access to a diverse national sample, recruited by an established marketing research vendor specializing in youth. The vendor manages an online panel of 65,000 U.S. youth and young adults. Members were recruited via buzz campaigns, newspaper ads, and social networks. Panelists earned points for each completed survey that could be redeemed for prizes. Panel management procedures complied with marketing research industry standards set by professional marketing research associations.

Procedures for obtaining proper online consent were implemented. No identifying information was collected, and guidelines established by the Children's Online Privacy Protection Act (COPPA) were followed. Youth participants were given assent forms and could elect not to participate. Parental consent was obtained for panelists under the age of 18. The study team had no direct contact with recruited individuals. The Chesapeake/Advarra Institutional Review Board reviewed and approved this study.

The study sample consisted of 3174 participants. Two groups were recruited: (a) ENDS Users, defined as youth who have ever tried e-cigarettes or other ENDS, and (b) a Control Group, defined as youth who have never tried ENDS. This analysis focused on ENDS users ($n = 1549$). Although respondents were asked about their current ENDS use, the focus of this research was on initiation; therefore, all respondents who had ever tried ENDS were included in the analysis. Quotas were set for key demographics, ensuring sufficient numbers of participants to examine or control for the following factors: age, sex, and race/ethnicity. Non-Hispanic Blacks and Hispanics were oversampled to ensure sufficient sample sizes for comparison by race and ethnicity. Age, sex, and race/ethnicity data were employed to accurately weight the results. Post-hoc blocking was used to evaluate other issues of interest (e.g., geographic region). The data were weighted to be representative of the overall U.S. population in terms of age, sex, race, ethnicity, and region.

2.2. Measures

Demographic variables included age group based on birth year and month, sex, and race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic/Latino, and non-Hispanic Other – including more than one race, Asian or Pacific Islanders, Native American). To determine flavor preference, we asked "Which flavor of electronic nicotine product is your favorite?" Respondents were shown a list of options and were asked to choose one of the following answers: 1) tobacco; 2) menthol, mint, or wintergreen; 3) fruit, such as grape or strawberry; 4) candy, such as gummy bear; 5) sweet, such as vanilla or desserts; 6) coffee; 7) chocolate; 8) alcohol, such as strawberry daiquiri or piña colada; 9) spice, such as cinnamon or clove; 10) other; 11) don't know; and 12) none of the above. Because "fruit" and "menthol, mint or wintergreen" were the most commonly selected answers and other answer options were selected at significantly lower frequencies, we classified answers on flavor preference into two ways for the analyses: "fruit flavors" vs. "all others" and "menthol/mint/wintergreen" vs. "all others."

To determine ever-ENDS use, we asked "Which of the following types of tobacco have you ever tried (even one time or two times)?" and listed a choice of 10 tobacco product types with corresponding images: 1) electronic nicotine products, 2) cigarettes, 3) traditional cigars, 4) cigarillos, 5) smokeless tobacco, 6) hookahs to smoke tobacco, 7) little or filtered cigars, 8) dissolvable tobacco products, 9) bidis and kreteks, and 10) others. To determine tobacco product type used first, we asked "Which of the following type of tobacco did you try first?" Respondents were shown a list of the products they had ever tried and were asked to select the one they had tried first. The answers were later dichotomized as "tried ENDS product first" vs. "tried non-ENDS product first."

2.3. Statistical analysis

Descriptive analyses were used to show the distribution of flavor preferences and the types of tobacco products first used. Differences in demographic characteristics related to flavor preference groups or tobacco product first tried were compared using Chi-square tests. Logistic regression was used to examine the associations of fruit flavor preference and ENDS initiation with selected demographic characteristics including age, sex, and race/ethnicity. We repeated the analyses, assessing the association of menthol/mint/wintergreen preference with demographic characteristics and ENDS initiation. In addition, because the differences in age categories on the association between flavor preferences and ENDS initiation may be due to the differences in ENDS use patterns, we further employed interaction terms between age groups and ENDS use patterns (weekly users, monthly/irregular users, and former users). Sampling weight was generated and applied in the analysis. Analyses were conducted with SAS statistical software (version 9.4 with SAS/STAT 14.1, SAS Institute Inc., Cary, NC).

3. Results

3.1. Sample characteristics

The weighted sample of 1549 ENDS users included teens across three age groups: 13–14 (14.1%), 15–16 (34.7%), and 17–18 (51.3%); 56.9% were male and 43.1% were female; 64.4% were non-Hispanic White, 21.7% were Hispanic/Latino, 10.1% were non-Hispanic Black, and 3.7% were non-Hispanic Other (see Table 1).

3.2. Flavor preferences

Fruit was the most frequently cited "favorite" flavor among these ENDS users (29.7%), followed by menthol/mint/wintergreen (10.0%), candy (7.6%), chocolate (6.4%), coffee (6.3%), sweet (6.2%), tobacco (5.8%), other (2.2%), alcohol (1.1%), spice (0.2%), and none of the

Table 1
Flavor Preference by Demographic Characteristics*

Characteristics	ALL	Which flavor of electronic nicotine product is your favorite?										
		Tobacco	Menthol, mint	Fruit	Candy	Sweet	Coffee	Chocolate	Alcohol	Spice	Others **	Don't know
N	1549	90	155	460	118	96	98	99	17	3	128	285
Age Groups [‡]												
13–14	218	22	16	52	4	22	10	18	0	1	17	57
	14.1%	10.2%	7.4%	23.6%	1.8%	10.0%	4.7%	8.0%	0.0%	0.5%	7.7%	26.0%
15–16	537	25	47	160	35	20	43	43	7	0	49	107
	34.7%	4.7%	8.7%	29.8%	6.6%	3.7%	8.1%	8.1%	1.4%	0.0%	9.1%	19.9%
17–18	794	42	92	249	79	54	44	38	9	2	62	122
	51.3%	5.3%	11.6%	31.3%	10.0%	6.9%	5.6%	4.8%	1.2%	0.2%	7.8%	15.3%
Sex [‡]												
Male	882	61	102	242	69	53	69	69	5	2	81	128
	56.9%	7.0%	11.6%	27.4%	7.8%	6.0%	7.8%	7.8%	0.6%	0.3%	9.2%	14.5%
Female	668	29	53	218	50	43	29	30	12	0	46	158
	43.1%	4.3%	7.9%	32.7%	7.4%	6.5%	4.3%	4.6%	1.8%	0.0%	6.9%	23.6%
Race/Ethnicity [†]												
Hispanic	336	15	37	109	29	28	21	23	8	0	20	47
	21.7%	4.4%	10.9%	32.2%	8.5%	8.3%	6.2%	6.8%	2.4%	0.0%	6.1%	14.1%
Non-Hispanic	998	66	103	276	68	60	68	64	7	1	88	196
White	64.4%	6.6%	10.4%	27.6%	6.9%	6.0%	6.8%	6.4%	0.7%	0.1%	8.9%	19.6%
Non-Hispanic	157	8	7	55	15	5	8	9	1	1	13	34
Black	10.1%	4.8%	4.7%	35.3%	9.3%	3.3%	5.1%	5.7%	0.9%	0.9%	8.2%	21.8%
Non-Hispanic	57	2	7	20	7	3	1	4	0	0	6	8
Others***	3.7%	2.9%	12.7%	35.6%	11.6%	5.0%	2.2%	6.1%	0.0%	0.0%	10.4%	13.5%

* N = 1,549, data are weighted row percentages

Others (8.2%) includes other flavors (2.2%) and “none of the above” (6.0%); * Asian/Pacific Islander/Multiple races

† P-value < 0.05, ‡ P-value < 0.001 for group comparisons across flavor preference groups based on χ^2 tests (excluding cells with 0 frequency).

above (6.0%). Examples of other flavors that were written in were Red Bull and cereal. The rest selected “don't know” (18.4%) (not depicted in figures).

3.2.1. Fruit flavor

Significant differences in flavor preference were observed across demographic groups with all p-values < 0.05 (see Table 1). For example, the older age groups were more likely than their younger counterparts to select fruit as their favorite flavor (31.3% age 17–18 and 29.8% age 15–16 vs. 23.6% age 13–14). Additionally, the older age groups were less likely than the younger age group to select “don't know” (15.3% age 17–18 and 19.9% age 15–16 vs. 26.0% age 13–14). Females were more likely than males to prefer fruit flavor (32.7% vs. 27.4%). Non-Hispanic Whites were less likely than racial and other ethnic minority groups to report fruit flavor as their preference (27.6% vs. 32.3% – 35.6%).

In the multivariable analysis with the outcome as preference for fruit flavor vs. all others (see Fig. 1A), the odds of selecting fruit as the favorite flavor were significantly higher in the 17–18 age group vs. the 13–14 age group (OR: 1.5, 95% CI: 1.03–2.06) and for females vs. males (OR: 1.3, 95% CI: 1.03–1.60). The odds were significantly lower for non-Hispanic Whites vs. non-Hispanic Blacks (OR; 0.7, 95% CI: 0.49–0.99). No other significant differences were observed.

3.2.2. Menthol/Mint/Wintergreen flavor

The 17–18 age group was more likely than the 13–14 age group to prefer menthol/mint/wintergreen (11.6% vs. 7.4%). Females were less likely than males to prefer this flavor (7.9% vs. 11.6%). Non-Hispanic Whites and Hispanics were more likely than non-Hispanic Blacks to prefer this flavor (10.4% and 10.9% vs. 4.7%).

In the multivariable analysis (see Fig. 1B), the odds of selecting menthol/mint/wintergreen as the favorite flavor were marginally higher in the 17–18 age group than the 13–14 age group (OR: 1.7, 95% CI: 0.95–2.87). The odds were significantly lower for females than males (OR: 0.6, 95% CI: 0.45–0.91). And the odds were significantly higher for non-Hispanic Whites vs. non-Hispanics Blacks (OR: 2.3, 95%

CI: 1.05–4.88) and for Hispanics vs. non-Hispanic Blacks (OR: 2.3, 95% CI: 1.01–5.18).

3.3. First product tried

Across all tobacco products, ENDS were most likely to be tried first (48.3%), followed by combustible cigarettes (32.9%), hookahs for smoking tobacco (5.7%), cigarillos (4.2%), smokeless tobacco (4.0%), traditional cigars (2.1%), and others [2.8%, including little or filtered cigars (1.1%), bidis and kreteks (0.7%), dissolvable tobacco (0.5%), and others (0.6%)] (not depicted in figures).

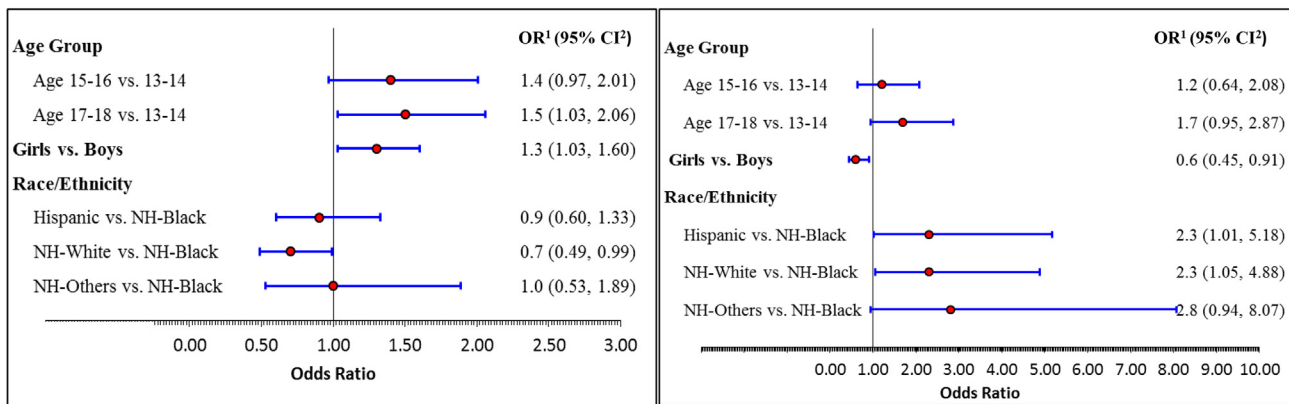
There were significant differences in the type of tobacco product first tried across demographic groups (all p-values < 0.01) (see Table 2). For example, the 13–14 and 15–16 age groups were more likely to try ENDS first, compared to the 17–18 age group (52.1% age 13–14, 54.4% age 15–16, 43.1% age 17–18); and non-Hispanic Whites were less likely than other groups to report that they tried ENDS first compared to other race/ethnic groups (46.0% vs. 51.4–54.5%).

The multivariable analysis examined age group, sex, race/ethnicity, as well as flavor preference (see Fig. 2). The odds of trying ENDS first among those who indicated preference for fruit flavor (Fig. 2A) were significantly lower in the 17–18 age group vs. the 13–14 age group (OR: 0.7, 95% CI: 0.49–0.89). The odds were significantly higher among females compared to males (OR:1.3, 95% CI:1.04–1.57). No significant differences were observed by race/ethnicity. Those who preferred fruit flavor were 1.5 times more likely to have tried ENDS first compared to those who preferred non-fruit flavors (OR: 1.5, 95% CI: 1.21–1.89).

The odds of trying ENDS first among those who indicated preference for menthol/mint/wintergreen flavor (Fig. 2B) were significantly lower in the 17–18 age group vs. the 13–14 age group (OR: 0.7, 95% CI: 0.52–0.95). The odds were significantly higher among females compared to males (OR:1.3, 95% CI:1.03–1.56). No significant differences were observed by race/ethnicity. Those who preferred menthol/mint/wintergreen flavor were half as likely to have tried ENDS first compared to those who preferred non-menthol/mint/wintergreen flavors (OR: 0.5, 95% CI: 0.37–0.75).

1A. Fruit Preference

1B. Mint/Menthol/Wintergreen Preference



¹ OR= odds ratio; ² CI= confidence interval

Fig. 1. Multivariable Adjusted Odds Ratios (95% CI) of Preferred Flavor.

In the analyses employing the interaction terms between age groups and ENDS use patterns in models examining the associations of flavor preference with the likelihood of trying ENDS first, there was no interaction found. For example, in the models of trying ENDS first with fruit flavor (corresponding with Fig. 2A), the odds of trying ENDS first in the 17–18 age group vs. the 13–14 age group were OR: 0.7, 95% CI: 0.37–1.33, OR: 0.8, 95% CI: 0.47–1.48, and OR: 0.6, 95% CI: 0.40–0.96 for daily/weekly users, monthly/irregular users, and former users, respectively (not depicted in tables/figures).

4. Discussion

This study examined flavor preference related to ENDS use among demographic subgroups based on age, sex, and race/ethnicity and

ENDS choice as an initial tobacco product in youth. Fruit was the most common favorite flavor among ENDS users, a finding that parallels Morean et al.’s results (Morean et al., 2018). Menthol/mint/wintergreen was the second most preferred flavor. Preference for both fruit and menthol/mint/wintergreen flavors was higher in older age groups, particularly those aged 17–18 compared to those aged 13–14. The 13–14 age group was more likely to indicate a lack of preference compared to the older groups. The younger group’s more frequent lack of preference may occur due to less knowledge of or experience with vaping. With additional experience trying flavors, more definitive preferences may emerge. In addition, to differences by age, we found differences by sex. Females were more likely than males to prefer fruit, a result that is in line with Piñeiro et al.’s general finding that adult females prefer non-tobacco flavors (Piñeiro et al., 2016). Non-Hispanic

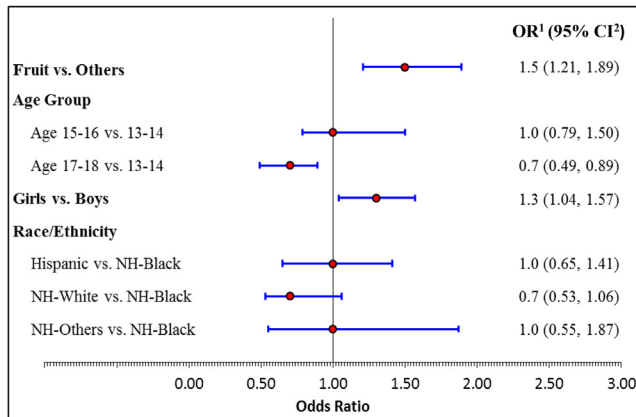
Table 2
Type of First Tried Tobacco Product by Demographic Characteristics.*

Characteristics	ALL	Which of the following type of tobacco did you try first? Choose one.						
		Electronic nicotine products	Cigarettes	Traditional cigars	Cigarillos	Smokeless tobacco	Hookahs to smoke tobacco	Other products**
N	1549	748	510	33	64	62	88	44
Age Groups†								
13–14	218	114	65	7	5	12	10	6
	14.1%	52.1%	29.9%	3.2%	2.2%	5.5%	4.6%	2.6%
15–16	537	292	156	7	20	14	30	18
	34.7%	54.4%	29.0%	1.3%	3.7%	2.6%	5.6%	3.4%
17–18	794	342	289	19	40	36	48	20
	51.3%	43.1%	36.4%	2.4%	5.0%	4.5%	6.0%	2.5%
Sex‡								
Male	882	407	265	27	38	54	52	41
	56.9%	46.1%	30.0%	3.0%	4.3%	6.1%	5.9%	4.7%
Female	668	342	246	6	27	8	36	3
	43.1%	51.2%	36.8%	1.0%	4.0%	1.2%	5.5%	0.4%
Race/Ethnicity‡								
Hispanic	336	173	101	8	15	0	28	11
	21.7%	51.4%	30.1%	2.4%	4.4%	0.1%	8.4%	3.3%
Non-Hispanic	998	459	351	20	37	59	43	28
White	64.4%	46.0%	35.2%	2.1%	3.7%	5.9%	4.3%	2.8%
Non-Hispanic	157	86	37	4	11	2	14	3
Black	10.1%	54.5%	23.8%	2.8%	7.0%	1.3%	8.8%	1.9%
Non-Hispanic	57	30	20	0	1	1	3	2
Others***	3.7%	53.1%	35.1%	0.2%	2.4%	1.5%	4.8%	3.0%

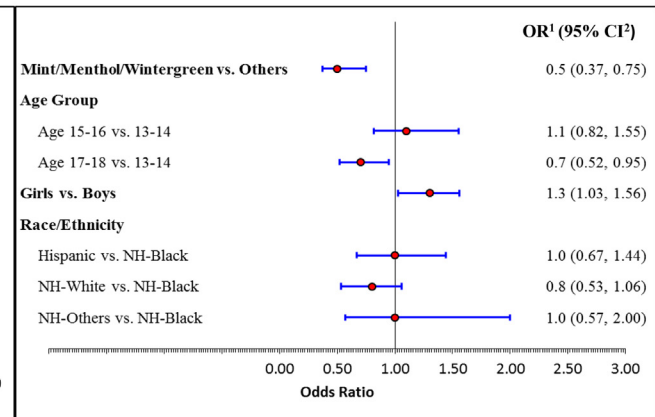
* N = 1–549- data are weighted row percentages; ** Includes little or filtered cigars- dissolvable tobacco products- bidis and kreteks- or others; *** Asian/Pacific Islander/Multiple races.

† P-value < 0.01- ‡ P-value < 0.001 for group comparisons across types of first tried tobacco product based on χ^2 tests (excluding cells with 0 frequency).

2A. Fruit Preference



2B. Mint/Menthol/Wintergreen Preference



¹OR= odds ratio; ²CI= confidence interval

Fig. 2. Multivariable Adjusted Odds Ratios (95% CI) of Trying ENDS First.

Whites were less likely than other racial/ethnic groups to select fruit as their favorite flavor. And non-Hispanic Whites and Hispanics were more likely than non-Hispanic Blacks to prefer menthol/mint/wintergreen, which differs from research among non-Hispanic adult smokers indicating a preference for menthol cigarettes (D'Silva et al., 2018; Smith et al., 2019). However, there were no significant differences by race/ethnicity with regard to the odds of initiating ENDS based on current preference for these flavors. Future research exploring the reasons associated with flavor preferences may provide direction for communications strategies to demographic groups.

ENDS is the tobacco product most likely to be tried first, particularly among participants under the age of 17. This finding is similar to that reported by Krishnan-Sarin et al. who found that more than half of middle school e-cigarette users tried e-cigarettes as their first tobacco product (Krishnan-Sarin et al., 2015). Of course, this finding could be a cohort effect, such that investigations of more recent data may reveal a different pattern. The results of our study reinforce the need to carefully monitor youth access to these devices as well as to restrict marketing and promotion to youth, especially messaging that emphasizes flavors. When compared to individuals with all other flavor preferences, those who prefer fruit flavor were twice as likely to have tried ENDS first. Because many fruit flavor options are available for ENDS use, this relationship needs further examination in future studies. Those who prefer menthol/mint/wintergreen flavor were half as likely, compared with those with other flavor preferences, to have tried ENDS first. We should be mindful that other tobacco products also provide a variety of flavor options (e.g., little cigars and cigarillos). Our findings suggest an association between flavor preference and ENDS initiation, supporting previous research (Bold et al., 2016; Kong et al., 2015; Zare et al., 2018).

4.1. Study limitations

Despite the study's contributions, some limitations need to be considered. A non-random sample was recruited (i.e., oversampling key subgroups) to ensure adequate representation of specific populations of interest, consistent with our focus on examining differences across vulnerable populations. Thus, the results based on this sample cannot be generalized or used to determine prevalence rates of tobacco product use. Also, the survey was conducted online, which may reduce the generalizability of findings as individuals with limited internet access were likely excluded. Additionally, responses were self-reported and thus subject to associated biases (e.g., recall). Finally, the study was cross-sectional, limiting our ability to examine the causality between flavor preferences and product initiation, or persistence in use of

particular products or product characteristics, such as flavors.

5. Conclusions

Results from previous research suggest flavor is a leading reason behind ENDS initiation for youth, and that fruit flavor is preferred, followed by menthol/mint/wintergreen. We found several differences related to demographic characteristics that have relevance for developing messaging targeting specific youth audiences, notably the older age group and females, both of whom were most likely to prefer fruit flavors. Additionally, we found a significant association between current preference for fruit flavors and ENDS initiation. These findings suggest that policies designed to eliminate advertisements that promote e-cigarette flavors would reduce the attractiveness of e-cigarettes to minors. The FDA has now restricted the marketing and sale of certain flavored e-cigarettes, but has not included menthol and tobacco flavor in that restriction (U.S., 2020). Although our research found that fruit flavor was mentioned most often among youth, menthol/mint/wintergreen was the second most commonly cited flavor. The FDA's decision to exclude menthol flavor may be based on public comments claiming that ENDS products facilitate smoking cessation, and menthol-flavoring can attract more individuals to this option. Although this issue is not fully resolved, it is worth noting that several studies have shown vaping is unlikely to facilitate cessation and, instead, may increase the risk of continued use. (Giovenco and Delnevo, 2018; Kalkhoran and Glanz, 2016; Weaver et al., 2018) Further, a recent study that observed a positive cessation effect employed methods that limit the interpretation of findings (Hajek et al., 2019). Overall, if regulatory or legislative policies continue to allow menthol flavors to remain on the market, it is our opinion that there is a strong possibility that youth will transition to menthol from mint or fruit flavors. In conclusion, the authors suggest that the marketing and sale of all e-cigarette flavors other than tobacco be eliminated as part of an effort to eventually remove all flavorings other than tobacco from all tobacco products.

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CRedit authorship contribution statement

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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