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Validation of the Electronic Cigarette Attitudes Survey (ECAS) for Youth

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Abstract

Electronic cigarette (e-cigarette) use among adolescents has rapidly increased in recent years, especially among Latinx and non-Latinx Black adolescents. Yet, limited research exists on adolescent attitudes that may contribute to the popularity of these products. This is in part due to the lack of measures focused on assessing adolescent attitudes toward e-cigarette use. The aim of this study was to develop a measure of adolescent e-cigarette use attitudes. The sample consisted mainly of Latinx and non-Latinx Black adolescents. Data were collected from 247 youth (*M* age = 16.0, *SD* = 1.2), 63.6% were girls, a majority (69.2%) were non-Latinx Black, and 27.1% were Latinx. The Electronic Cigarette Attitudes Survey (ECAS) is comprised of 12 items reflecting attitudes associated with e-cigarettes, which were derived from prior theoretical, quantitative, and qualitative work with e-cigarette users. To determine the factor structure, a parallel analysis scree plot and an exploratory factor analysis (EFA) of the ECAS was conducted using half of the sample chosen at random (n=113). Results supported a one-factor solution. A confirmatory factory analysis (CFA) was conducted on the other randomly chosen half of participants (n =121). Results confirm a one-factor solution. No significant differences were found on ECAS scores based on race/ethnicity or e-cigarette use status (lifetime e-cigarette use vs. no use). The ECAS represents a viable measure for assessing e-cigarette attitudes among youth.

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Keywords

electronic cigarettes; e-cigarettes; vaping; adolescents; attitudes

Introduction

Combustible cigarette use has decreased among youth within the past decade (Porter et al., 2015); yet, electronic cigarette (e-cigarette) use, also known as vaping, has significantly increased. In 2017, results from Monitoring the Future reported that 30-day prevalence rates of e-cigarette use among 8th (20.3%), 10th (19.4%) and 12th (16.1%) graders were remarkably high (Johnston et al., 2018). E-cigarette rates among youth in Florida have increased, with rates quadrupling from 2011 to 2015 (Tobacco Free Florida, 2015). Results from Tobacco Free Florida also indicate that these rates are disproportionately higher among Latinx and non-Latinx Black youth compared to non-Latinx White youth (Porter et al., 2015). This recent increase in e-cigarette rates is concerning given that use of these products among youth may lead to the use of other harmful substances (e.g., combustible cigarettes). According to the CDC, in comparison to other racial/ethnic groups, non-Latinx Black (7.0%) and Latinx (7.1%) youth have the highest probability of initiating cigarette smoking prior to age 13 (CDC, 2015). Given this, identifying factors that may lead to e-cigarette use can help shed light on why rates are increasing. A critical step in accurately assessing e-cigarettes popularity among youth is the development of a measure that examines adolescent attitudes towards these products. Thus, the aim of the present study is to develop and assess the psychometric properties of the Electronic Cigarette Attitudes Survey (ECAS) among youth at highest risk for e-cigarette initiation based on race/ethnicity.

Research on e-cigarette usage among adults has largely focused on the potential utility of these products as harm reduction tools (Kalkhoran, & Glantz, 2016). While some evidence exists supporting e-cigarettes as a safer alternative for adults using combustible cigarettes (e.g., Dawkins et al., 2013; Etter & Bullen, 2011; Farsalinos et al., 2013), less is known about risks to non-smoking youth. It is likely that youth initiate e-cigarettes for reasons other than harm reduction given that combustible cigarette usage among adolescents is at an all-time low (Johnston et al., 2018). Moreover, the initiation of e-cigarettes may increase the likelihood of combustible cigarette use or developing nicotine dependence compared to those who never initiate (Soneji et al., 2017). Thus, a greater understanding of attitudes associated with the use of e-cigarettes within this developmental period is critical to inform preventive interventions.

Preliminary qualitative and quantitative research studies have begun to focus on why e-cigarettes appeal to youth. One qualitative study conducted ten focus groups on young adult e-cigarette users (Coleman, 2015). Overall, results indicate that young adults may be more likely to use e-cigarettes compared to combustible cigarettes because of: (1) a perception of reduced health risk, (2) smell, (3) price, (4) flavoring, (5) customization, (6) use allowed in more places, and (7) a shift in norms where combustible cigarettes are viewed as “outdated” while e-cigarettes are “trendy” (e.g., Ayers et al., 2017; Coleman, 2015). Similarly, other qualitative studies note that adolescents and young adults may prefer e-cigarettes over

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combustible cigarettes for several reasons, including: e-cigarettes can be consumed anywhere (Dawkins et al., 2013; Kong et al., 2014; Pepper et al., 2014), e-cigarettes produce less secondhand “smoke” (Farsalinos et al., 2014), e-cigarettes are less harmful (e.g., Etter & Bullen, 2011; Kong et al., 2014; Pepper et al., 2014), and e-cigarettes are less addictive (e.g., Choi & Forster, 2013; Choi & Forster, 2014; Richardson et al., 2014). Quantitative studies also indicate adolescents have favorable attitudes towards and perceive less risk from e-cigarettes compared to combustible cigarettes. For example, one study found that participants were more accepting of indoor/outdoor use of e-cigarettes compared to combustible cigarettes, and almost half reported e-cigarettes feel cleaner and safer than smoking cigarettes (Gorukanti et al., 2017). While these findings have made a notable contribution in determining attitudes that may be associated with e-cigarette use, to date an empirically supported measure on the attitudes associated with e-cigarette use is lacking.

While identifying attitudes that lead to e-cigarette use can help inform preventive interventions, it is unclear whether adolescents within all racial/ethnic groups share similar attitudes. Among Latinx and non-Latinx Black youth, e-cigarette use has increased substantially and is disproportionately larger in comparison to non-Latinx White youth (Saddleson et al., 2015). Research also indicates that, compared to non-Latinx Black youth, Latino youth had higher odds of initiation (Hammig, Daniel-Dobbs, & Blunt-Vinti, 2017). To date, there is a dearth of information on differences in e-cigarette attitudes that may help inform disparities of use among Latinx and non-Latinx Black youth. An understanding of e-cigarette attitudes among youth at greatest risk for initiation can provide insight into malleable factors for adolescents across varying racial/ethnic groups.

Items for the ECAS were derived from prior qualitative (e.g., Coleman, 2015), quantitative (e.g., Gorukanti et al., 2017) and theoretical (e.g., Schneirder & Diehl, 2016) work on possible factors contributing to the recent rise in popularity of these products. More specifically, the aim was to create a measure reflecting theorized health risks, product characteristics (e.g., taste and inconspicuous use), price, ease of purchase, and norms associated with e-cigarette use. First a parallel analysis scree plot and an exploratory factor analysis (EFA) were conducted to determine how many factors to retain on the ECAS. Next, a confirmatory factor analysis (CFA) was conducted to determine if the factor structure was consistent using a separate sample. Lastly, exploratory analyses were conducted to determine group differences on the ECAS by both race/ethnicity (Latinx vs. non-Latinx Black) and e-cigarette use status (lifetime users vs. non-users).

Method

Procedure

Data for the present study were taken from a larger study investigating adolescent behaviors, substance use, and mental health among youth. Participants were recruited from an inner-city high school in Southeast Florida. All the students attending the public high school were invited to participate in the study. The researchers collaborated with the school to coordinate scheduled group meetings for data collection. Students who agreed to participate in the survey completed an online questionnaire through Qualtrics (2015) via their smartphones or

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tablets provided by the researchers. Approval from the Institutional Review Board was obtained.

Prior to beginning the questionnaire, participants read and reviewed the assent form on Qualtrics, and were provided with comprehensive information about the study. Informed consent was obtained from parents or legal guardians for all participants under 18 years old. For those who were 18 years and older, electronic consent was obtained from them via Qualtrics.

The data were gathered within a classroom, and a total of eight group interview sessions with approximately 30 participants per session were held. Of the 265 students who agreed to participate in the study, 18 students did not provide parental consent and were unable to participate. All participants in the study sample (n=247) also provided assent. Teachers offered students class participation credit to those that completed the questionnaire. No other remuneration was offered to students who participated or teachers.

Participants

Participants (n=247) were between the ages of 14 to 19 years old ($M\ age$ = 16.0, SD = 1.2), 18.6% were Latinx White, 8.5% were Latinx Black, 69.2% were non-Latinx Black, 1.2% were non-Latinx White, and 2.5% were other (Haitian). More than half of the sample was female (63.6%), and one participant identified as transgender female. Additionally, 19.8% were in 9th grade, 34.8% were in 10th grade, 26.3% in 11th grade, and 19.1% were in 12th grade. Participants self-reported their socioeconomic status (SES), with most of the sample identifying as lower middle class (48.6%), followed by upper middle class (39.4%), poor (9.2%) and wealthy (2.8%).

Measures

Electronic Cigarette Attitudes Survey (ECAS).—Items were adopted from prior research—including both theoretical, quantitative, and qualitative investigations—on the attitudes of e-cigarette versus combustible cigarette use among adolescents and young adults (e.g., Coleman, 2015; Gorukanti et al., 2017; Schneider & Diehl, 2016). 12 items pertaining to reasons/attitudes for youth e-cigarette use across multiple studies were developed by our research team comprised of substance use experts. This includes items pertaining to: flavoring, odor, cost, sense of control/customizability, health effects, and permissibility of use, both indoors and outside. Participants were asked to rate their level of agreement to these 12 statements comparing e-cigarette use to regular (combustible) cigarettes regardless of whether the participant had any prior experience using either product. Each item was coded on a Likert-type scale ranging from 1 to 5, with 1 = "*strongly disagree*" to 5 = "*strongly agree.*" Sample items included, "*e-cigarettes allow people to show their individuality and personality by customizing their product (e.g., vape pen, vape mod)*" and "*e-cigarettes are more appealing because they are odorless or smell good compared to regular cigarettes*" (see Appendix for complete ECAS).

Lifetime Substance Use.—Participants' lifetime use (yes/no) of e-cigarettes, combustible cigarettes, other tobacco products, and marijuana use was assessed.

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Demographic Information.—Participants' demographic information, including age, biological sex, grade, SES, and race/ethnicity was self-reported by participants.

Missing Data

Thirteen cases were removed using listwise deletion due to unavailable data on the ECAS. Participants with a missing ECAS did not differ from participants with available ECAS data across demographic characteristics.

Data Analysis

Preliminary data analyses to test for assumptions of normality and bivariate outliers and descriptive statistics were conducted using IBM Statistical Package for Social Science (SPSS) Statistics version 22.0 (IBM SPSS Corp, 2013). This includes examining the proportion of adolescents who reported ever using e-cigarettes, combustible cigarettes, tobacco products, and other substances (i.e., marijuana). SPSS was also used to test group differences (i.e., ANOVAs) on the ECAS measure across lifetime e-cigarette users vs. non-e-cigarette users, and across Latinx and non-Latinx Black groups. Lastly, SPSS was used to conduct a parallel analysis scree plot to guide factor extraction. Mplus 8.1 (Muthén and Muthén, 2017) was used to conduct both the EFA estimated with a geomin (oblique) rotation with the first half (n =113) of the sample chosen at random and the CFA with the second half of the sample chosen at random (n =121). Thus, the minimum amount of data for an EFA (5 participants per item [Worthington & Whittaker, 2006]) was satisfied.

Decisions on how many factors to retain on the ECAS were evaluated using a combination of Kaiser's eigenvalue greater than one criterion (Kaiser, 1960), the parallel analysis scree plot, factor loadings of 0.50 or greater (Costello & Osborne, 2005), no evidence of cross loading, and adequate model fit indices (i.e., root mean square error of approximation [RMSEA] < 0.08, comparative fit index [CFI] and Tucker-Lewis Index [TLI] > 0.90, and standardized root mean square residual [SRMR] < 0.08; Hu & Bentler, 1999). Modification indices above 10 were also examined to determine possible changes that could improve model fit for the CFA.

Results

Bartlett's test of sphericity for the overall measure indicated homogeneity of variances. Descriptive statistics on the item means indicated that the following items had the highest endorsement on average: item 3, "The fruit and candy flavors available with e-cigarettes is particularly appealing to kids my age" (M=2.47, SD=1.40), item 6, "Smoking regular (combustible) cigarettes is outdated and lame" (M=2.73, SD=1.41), and item 8, "It is easier to buy e-cigarettes compared to buying regular (combustible) cigarettes" (M=2.43, SD=1.14). The remaining item means were less than 2.40 (see Table 1).

The lifetime prevalence of e-cigarettes, other tobacco products (i.e., combustible cigarettes, snus, dissolvable tobacco, or chewing tobacco), and marijuana (smoking or vaping) use was calculated by race/ethnicity and sex (Table 2). Latinx Black youth reported the highest prevalence of e-cigarette use (19.0%), followed by Latinx White (16.3%) and Non-Latinx Black (13.0%). Combustible cigarette use was greatest among Latinx Black (9.5%), Latinx

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White (7.0%), and Non-Latinx Black (6.2%), respectively. For other tobacco products, Latinx Black reported the highest use (4.8%), followed by Latinx White (4.7%) and non-Latinx Black (3.7%). Smoking marijuana was highly reported with the greatest use among Latinx White (32.6%), Latinx Black (28.6%) and non-Latinx Black (25.5%), respectively. Vaping marijuana was highest among Non-Latinx Black (8.7%), followed by Latinx Whites (4.7%). Latinx Black youth did not report vaping marijuana. Lastly, Males had a higher rate of combustible cigarette use (7.0%), other tobacco products (5.8%), and vaping marijuana (7.0%), while females reported greater use of e-cigarettes (15.2%) and smoking marijuana (27.8%).

Exploratory Factor Analyses

A parallel analysis scree plot was conducted to compare 1000 observed eigenvalues to the 95th percentile of permuted eigenvalues for determining factor retention (see Figure 1; Costello & Osborne, 2005; Velicer & Jackson, 1990). As the first raw data eigenvalue is higher than the permuted eigenvalue, and the second eigenvalue is lower than the permuted eigenvalue, the parallel analysis supports a one-factor solution (Figure 1). In addition, the Kaiser's eigenvalue greater than one criterion supported a one-factor solution.

Nevertheless, we compared one- and two-factor models to determine the best fitting factor solution. The model fit for the one-factor was acceptable across indices, with the exception of the RMSEA (RMSEA = 0.099, CFI = 0.936, TLI = 0.922, and SRMR = 0.046). It is important to note that prior work demonstrates that models with smaller sample sizes (~100) had RMSEA values that often falsely indicated poor model fit (Kenny et al., 2014). All factor loadings were above 0.60 and significant at the 5% level (see Table 3). The overall measure demonstrated good internal consistency (Cronbach's α = .93). Although there was improvement in model fit for the two-factor solution (RMSEA = 0.078, CFI = 0.968, TLI = 0.952, SRMR = 0.036; χ^2 difference test = 40.978(11), p <.001) there were two factor loadings below the 0.50 cutoff and two items that loaded onto both factors. Accordingly, a one-factor solution was retained for subsequent analyses.

Confirmatory Factor Analysis

A CFA based on a one-factor solution of the ECAS was conducted on the second half of the sample chosen at random (n =121). Although all standardized loadings were significant (p < .001) and above the 0.50 criterion (range = 0.55–0.83), the model fit on several indices were below threshold (RMSEA = 0.124, CFI = 0.875, TLI = 0.847, and SRMR = 0.063). Modification indices supported adding covariances between error terms of items 1 and 2 and items 2 and 3 to improve overall model fit. These covariances were included as these items all reflect flavoring/ingredients of e-cigarettes and indicate that the ECAS may be represented by a bifactor model. Inclusion of these covariances improved the model fit so that all indices were acceptable, with the exception of the RMSEA (RMSEA = 0.092, CFI = 0.934, TLI = 0.917, and SRMR = 0.053).

Group Differences

Exploratory analyses testing group differences on the overall ECAS were conducted using ANOVAs based on: 1) e-cigarette use status (i.e., lifetime use of e-cigarette users versus

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non-e-cigarettes users) and 2) race/ethnicity (i.e. Latinx versus Non-Latinx Black). The results indicated no significant group differences.

Discussion

Predictors of e-cigarette use among adolescents have yet to be widely examined. By investigating possible reasons for the growing popularity of e-cigarettes among adolescents, researchers can help inform public health initiatives, such as regulation policies and prevention efforts. However, to date, a measure assessing adolescents' attitudes about e-cigarettes has yet to be developed. Accordingly, the aim of the present study was to develop a measure based on prior work (e.g., Coleman, 2015; Gorukanti et al., 2017; Schneider, & Diehl, 2016) that examines factors relevant to the upsurge of e-cigarette use among youth.

Overall, results provide support for the ECAS as a measure for assessing e-cigarette attitudes among adolescents. More specifically, the results from the parallel analysis scree plot and EFA supported a one-factor solution. All factor loadings were significant and above the 0.50 threshold. Moreover, the internal consistency for the overall measure was good (Cronbach's $\alpha = .93$). The CFA also supported a one-factor solution; however, the model fit was above threshold after adding covariances between error terms of items 1 and 2 and items 2 and 3. These items assess conceptually similar e-cigarette attitudes reflecting the flavoring/ingredients of e-cigarettes. This indicates that there may be two levels of test-related factors that contribute to participants' responses—an overall factor measured by all items of the ECAS, and a specific factor (related to attitudes regarding flavoring/ingredients of e-cigarettes) measured by three specific items—consistent with a bifactor model.

Results from the most frequently endorsed items (i.e., regular cigarettes are outdated and lame, fruit and candy flavorings are appealing, ease of buying e-cigarettes) have important implications for public policy as it suggests that public officials should closely regulate where these products are sold, who can purchase these products, and the flavorings of these products. It is important to note that only a small portion of the sample (28.0%) reported lifetime e-cigarette use. Thus, the means across the items are likely lower than if these were assessed among a group of current e-cigarette users. Nevertheless, it is important to assess reasons that may increase the likelihood of initiating usage of these products among non-users. Overall, the present study makes a significant contribution given the lack of a psychometrically-supported measure to quantify e-cigarette attitudes among youth.

Latinx youth were more likely to report lifetime use of e-cigarettes in the current study. This finding aligns with national data for e-cigarette ever-use among high school students that indicate Latinx have the highest reported frequency of ever-use (43.0%) (USDHHS, 2016). The results also indicated that females were more likely (15.2%) than males (12.8%) to report ever-use of e-cigarettes, which is a novel finding, as previous research has found that males report higher e-cigarette use among youth (Porter et al., 2015).

From 2014 and 2016, there was a substantial increase of high school students who were current e-cigarette users, from 10.8% in 2014 to 18.0% in 2016 (Tobacco Free Florida, 2017). Within the current sample, 28.0% reported lifetime use of e-cigarettes. For other

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tobacco products, Latinx Black youth reported the highest lifetime use (4.8%), followed by Latinx White (4.7%) and non-Latinx Black (3.7%). These findings are consistent with lifetime use of combustible cigarettes, with the highest percentage being Latinx Black (9.5%) followed by Latinx White (7.0%). Therefore, the present research findings reflect and inform these data as they indicate that minority youth continue to demonstrate high risk for usage of both e-cigarettes and other tobacco products.

Exploratory analyses were conducted to examine possible group differences on the ECAS measure based on race/ethnicity (Latinx vs. non-Latinx Black) and e-cigarette use status (lifetime users vs. non-users). Overall, findings did not support differences across these groups. It is important to note that a majority of the sample was non-Latinx Black (~70%) and most adolescents did not report lifetime use of e-cigarettes (~80%). In addition, given that Latinx and non-Latinx Black adolescents are at greatest risk for e-cigarette initiation and likely to have the most favorable attitudes towards e-cigarettes (CDC, 2015; Hammig, Daniel-Dobbs, & Blunt-Vinti, 2017), it may have been difficult to detect differences across these high-risk race/ethnic groups. Thus, it will be important that future work compare current e-cigarette users to non-users and assess a more diverse sample to determine possible differences across e-cigarette attitudes.

Limitations

This study makes a significant contribution to the literature; however, important limitations should be noted. Although this study focuses on adolescent youth who have demonstrated the highest increase in e-cigarette use, this study did not assess for current e-cigarette use and the findings may not generalize to youth from other racial/ethnic backgrounds. Although the EFA and CFA were conducted across two randomized participant groups, all were recruited from the same high school. It is important for future studies to replicate the one-factor solution using additional independent samples. In terms of item development, although items were derived from prior work conducted with adolescent and young adult e-cigarette users, cognitive testing with youth to determine whether items made sense and were relevant was not conducted. In addition, although the research team was comprised of substance use experts, an external group of experts did not review or provide feedback on the ECAS. Thus, it is possible that other relevant topics were omitted from the measure. Given the cross-sectional nature of the study, certain aspects of reliability (e.g., test-retest) were not tested and validity (e.g., predictive validity). Therefore, future studies should test additional aspects of reliability and validity to confirm the psychometric properties of this measure. Additionally, some of the items may be considered double-barreled, as multiple aspects of e-cigarettes are included in the same item (e.g., fruit and candy flavoring). However, these aspects were included within the same item given prior work indicating that these factors are often strongly associated (e.g., Choi et al., 2012; Harrell et al., 2017). It is possible that separating double-barreled items may produce a more nuanced understanding of adolescent attitudes. Lastly, these findings do not offer a possible cut-off score to identify problematic attitudes.

Despite these limitations, the present study is one of few efforts to develop a measure of youth e-cigarette attitudes. As e-cigarette use among youth is a significant public health

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concern, this study provides a scientifically robust measure in which to quantify adolescent e-cigarette attitudes, which can in turn aid efforts to prevent future e-cigarette use among youth. Moreover, findings from the present study provide potential targets for policy regulation to counter the recent popularity of these products.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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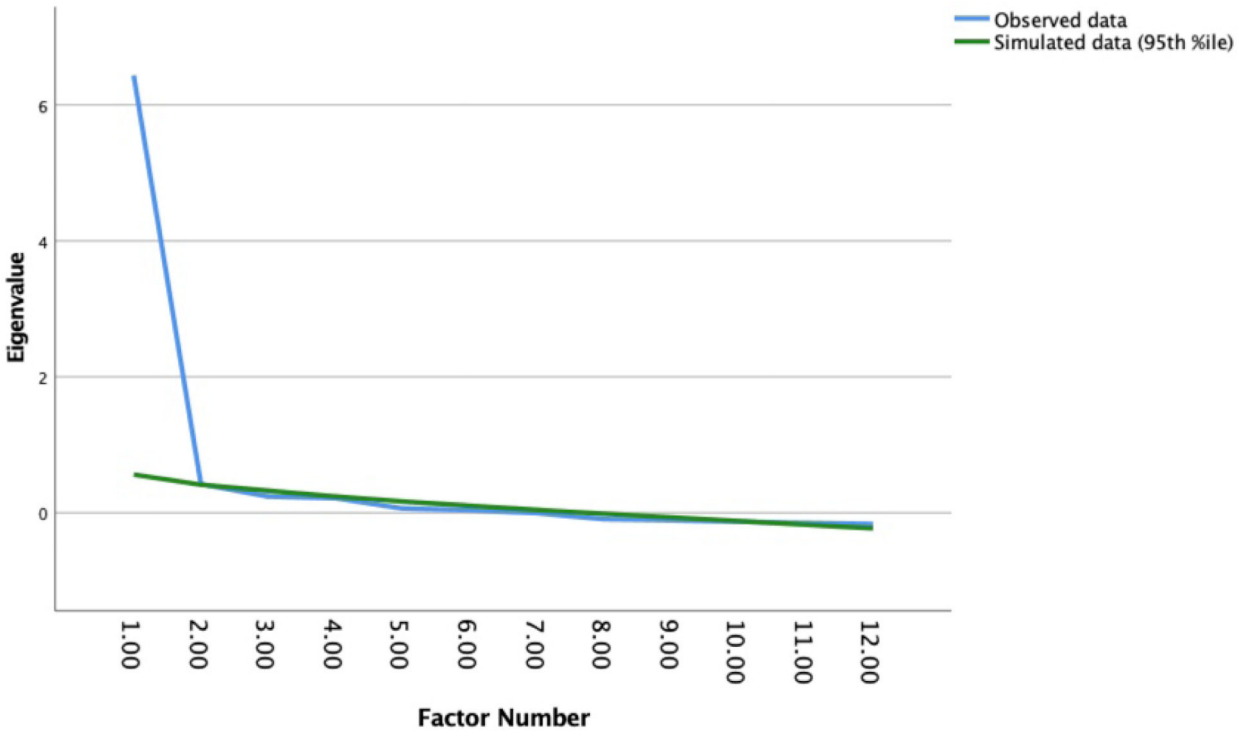

Figure 1.

Parallel analysis scree plot compared 1000 observed eigenvalues to the 95th percentile of permuted eigenvalues for determining factor retention. The first raw data eigenvalue is higher than the permuted eigenvalue, and the second eigenvalue is lower than the permuted value. Thus, a one-factor solution is supported.

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Table 1

Electronic Cigarette Attitudes Survey Item Means

ECAS Item	Mean (SD)	Minimum	Maximum
1. More control of the ingredients	2.14 (1.23)	1	5
2. Choose from a variety of flavors	2.32 (1.31)	1	5
3. Fruit and candy flavors are appealing	2.47 (1.40)	1	5
4. E-cigarettes are less harmful	2.16 (1.25)	1	5
5. E-cigarettes are cool and might make me popular	1.72 (1.05)	1	5
6. Regular cigarettes are outdated and lame	2.73 (1.42)	1	5
7. E-cigarettes are odorless or smell good	2.35 (1.28)	1	5
8. It is easier to buy e-cigarettes	2.43 (1.14)	1	5
9. I'm able to smoke e-cigarettes in more places	2.33 (1.22)	1	5
10. I'm less likely to get caught	2.19 (1.16)	1	5
11. Show individuality and personality	2.25 (1.14)	1	5
12. Less expensive than tobacco cigarettes	2.31 (1.11)	1	5

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Table 2

Percentage of Lifetime Use of E-cigarettes, Other Tobacco Products, and Marijuana

	E-Cigarettes	Combustible Cigarettes	Other Tobacco Products	Marijuana	Vaping Marijuana
Latinx (White)	16.3%	7.0%	4.7%	32.6%	4.7%
Latinx (Black)	19.0%	9.5%	4.8%	28.6%	0.0%
Non- Latinx Black	13.0%	6.2%	3.7%	25.5%	8.7%
Male	12.8%	7.0%	5.8%	25.6%	7.0%
Female	15.2%	6.2%	2.8%	27.8%	6.9%

Note: Tobacco products include snus, dissolvable tobacco, or chewing tobacco. Haitian and non-Latinx White youth are not presented in the table due to small sample size.

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Table 3

Exploratory Factor Analysis Item Loading for One-Factor and Two-Factor Solutions

Item	One-Factor	Two-Factor	
	Factor 1	Factor 1	Factor 2
1. More control of the ingredients	**.627***	−0.092	**0.725***
2. Choose from a variety of flavors	**.726***	**0.323***	**0.440***
3. Fruit and candy flavors are appealing	**.734***	**0.828***	−0.007
4. E-cigarettes are less harmful	**.806***	**0.506***	0.357
5. E-cigarettes are cool and make me popular	**.693***	0.023	**0.681***
6. Regular cigarettes are outdated and lame	**.608***	**0.560***	0.102
7. E-cigarettes are odorless or smell good	**.820***	**0.641***	0.250
8. It is easier to buy e-cigarettes	**.710***	0.011	**0.708***
9. I'm able to smoke e-cigarettes in more places	**.858***	**0.442***	**0.467***
10. I'm less likely to get caught	**.855***	0.016	**0.859***
11. Show individuality and personality	**.862***	−0.152	**1.033***
12. Less expensive than tobacco cigarettes	**.740***	0.109	**0.651***

Note.

* = $p < .05$.