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Social, educational, and psychological health correlates of e-cigarette and combustible cigarette use among adolescents in the US from 2015 to 2021

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Abstract

Background: The prevalence of e-cigarette and vaping products has increased in the past decade, especially among adolescents. To provide data that will inform identification of youth at high risk, the goals of this study are to determine the social, educational, and psychological health outcomes associated with e-cigarette use distinct from combustible cigarettes.

Methods: Annual samples of adolescents in grade 12 (years: 2015–2021, N=24,015) were analyzed from Monitoring the Future cross-sectional data. Students were categorized based on vaping and smoking patterns (no use, vape only, combustible cigarette smoking only, or both). Survey-weighted prevalence and logistic regression were used to assess associations.

Results: Between 2015 and 2021, 78.7% of students used neither e-cigarettes nor combustible cigarettes, 13.2% used e-cigarettes only (vape-only), 3.7% used combustible cigarettes only (smoke-only), and 4.4% used both. Students who vaped-only (OR:1.49, CI:1.28–1.74), smoked-only (OR:2.50, CI:1.98–3.16), or both (OR:3.03, CI:2.43–3.76) had worse academic performance than non-smoking, non-vaping peers after demographic adjustment. There was no significant difference in self-esteem between th A similar trend was found when measuring self-rated academic performance. Additionally, students who vaped-only (aOR: 0.74, 95% CI: 0.65–0.85), e “neither” group and the other groups, though the “vaping-only”, “smoking-only” and “both”

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Declaration of interests

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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groups were more likely to report unhappiness. Inconsistent differences emerged regarding personal & family beliefs.

Conclusions: Generally, adolescents who reported e-cigarette-only use had better outcomes than their peers who smoked cigarettes. However, students who vape-only reported poorer academic performance compared to those who did not vape or smoke. Vaping and smoking were not significantly related to self-esteem, but were linked to unhappiness. Still, vaping does not follow the same patterns as smoking, despite frequent comparisons in the literature.

Keywords

Adolescent; Vaping; Smoking

1. Introduction

E-cigarette and vaping product use has dramatically increased over the past decade, especially among adolescents (Miech et al., 2021). Between 2017 and 2019, the percentage of adolescents who vaped nicotine in the past twelve months approximately doubled for students in grades 8 (7.5% to 16.5%), 10 (15.8% to 30.7%), and 12 (18.8% to 35.3%) (Johnston et al., 2021). The 2021 National Youth Tobacco Survey estimated that 2.06 million youths in the United States are e-cigarette users, with 1 in 4 high school users reporting daily vaping (Park-Lee et al., 2021).

The high rate of e-cigarette use among adolescents is concerning, especially given that e-cigarette use increases the risk of subsequent combustible cigarette use, as well as other substance use (e.g., cannabis, alcohol use) (Cassidy et al., 2018; Evans-Polce et al., 2020; Gilbert et al., 2021; Kandel & Kandel, 2014; Keller-Hamilton et al., 2021; Pierce et al., 2021). Additionally, adolescents using these products risk potential exposure to carcinogens and toxicants, and face potential nicotine addiction (Jenssen et al., 2019). Other concerns regarding adolescent e-cigarette use include associations with mental health disorders such as attention-deficit hyperactivity disorder, anxiety disorders, low self-esteem, and depressive symptoms (Gorfinkel et al., 2022; Grant et al., 2019).

While this existing body of research suggests that the impact of vaping reflects, to a degree, the physical and mental health effects of smoking, less is understood about cigarette smoking and nicotine vaping's differential associations with other adolescent outcomes, such as educational outcomes, general well-being, and personal beliefs or attitudes. Understanding the relationship between smoking cigarettes, vaping, and these outcomes is a vital part of conducting surveillance, identifying emergent disparities, and developing a public health response to shifting substance use patterns. Indeed, understanding the educational, well-being, and personal belief outcomes tied to vaping nicotine is critical for a more nuanced evaluation of which adolescents are currently at risk, and whether they share the 'known' risk factors of smoking.

The first aim of the present study is to examine the association between vaping product use and academic performance, educational attainment, and attitudes towards school. Cigarette use is often associated with lower academic achievement through a variety of mechanisms,

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including using cigarettes as a coping mechanism for academic stress or both substance use and academic problems occurring as responses to other stressors (Dunbar et al., 2018; Ellickson et al., 2001; Garrett et al., 2019; Hawkins et al., 2021; Nutbeam & Aaro, 1991). It may be that e-cigarette use is similarly associated, and educational outcomes may be worse among students who use e-cigarettes. While some research has examined e-cigarette use and academic performance, finding e-cigarette initiation and use are both linked to lower academic performance (Dearfield et al., 2021; McCabe et al., 2017), these studies have not examined attitudes toward, or trajectories of, education. The broader literature on e-cigarettes is lacking with regard to these topics, thus a more thorough examination is warranted given that education is consistently linked to improved health and well-being (Feinstein et al., 2006; Witter et al., 1984).

The second aim is to examine whether there is an association between vaping product use, combustible cigarette use and well-being outcomes, specifically self-esteem and happiness. The mechanisms theoretically linking these outcomes and e-cigarette use are varied, with e-cigarette use potentially serving as a coping mechanism for low self-esteem and unhappiness or both e-cigarette use and lower well-being resulting from other stressors. While prior studies on e-cigarette use often report no significant association with self-esteem among adolescents (Pfeiffer et al., 2020; Staff et al., 2020), some research on older adolescents suggests otherwise, finding worse self-esteem among those who use e-cigarettes (Grant et al., 2019). Meanwhile, there is a robust literature suggesting that adolescents who either experimented with cigarette smoking or regularly smoke are more likely to report lower levels of self-esteem (Abernathy et al., 1995; Khosravi et al., 2016). Exploring this outcome with both students who use e-cigarettes and combustible cigarettes may help clarify these differing patterns and the magnitude of any differences between e-cigarette and combustible cigarette use. Additionally, little work has been conducted on adolescent happiness and either e-cigarette or cigarette use, even though this is a well-documented component of adolescent health and well-being, and thus this aim seeks to fill that gap in the literature.

Finally, the third aim is to examine if there is an association between vaping product use, combustible cigarette use and an individual's personal values and beliefs. Substantially less has been done on this domain of adolescents' lives, and identifying significant personal characteristics and attitudes among those who smoke, vape, or do both could offer novel insights as to who is at risk for these substance use behaviors.

2. Methods

These analyses utilized cross-sectional data from 24,015 adolescents in the 12th grade in Monitoring the Future (years: 2015–2019). This sample was derived from the approximately 4,000 respondents per year from 2015 to 2019 who were asked about study outcomes, as well as smaller samples from 2020 and 2021 (which were limited due to COVID-19). Monitoring the Future features a multi-stage random sampling design that includes schools for two years, replacing those that decline with alternates that have a similar size, urbanicity, and geographic location (Bachman et al., 2015).

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2.1. Vaping/Smoking Groups

In order to assess e-cigarette/vape use, we combined multiple items. For 2015–2016, adolescents were queried on the frequency of using “electronic cigarettes (e-cigarettes)” in the last 30 days, dichotomized as any vs no use. For 2017–2018, adolescents were queried on the frequency of vaping nicotine in the past 30 days. For 2019–2021, adolescents were queried on how many days they vaped nicotine in the past 30 days. These items were dichotomized to measure any vs no use. Once dichotomized in this way, the measures were combined as an overall assessment of e-cigarette/vape use.

Cigarette use was assessed as follows, “How frequently have you smoked cigarettes during the past 30 days?” and dichotomized into any vs none. The e-cigarette/vape use item and this cigarette item were then combined to make a four-level variable examining patterns of vaping/smoking (No smoking or vaping, Vaping-only, Smoking-only, Both).

2.2. Educational Outcomes

Academic performance was assessed with two items. The first addressed objective performance via letter grade in school, asking “Which of the following best describes your average grade so far in high school?” with responses collapsed into A’s and B’s vs. C’s and D’s. The second item assessed self-perceived academic performance, asking “Compared with others your age throughout the country, how do you rate yourself on school ability?” with response options ranging from “far below average” to “far above average”.

Expectation of college attendance was assessed with the following, “How likely is it that you will do each of the following things after high school? Graduate from college (four-year program)” with responses ranging from “definitely won’t” to “definitely will”. Desire for college attendance was assessed with the following: “Suppose you could do just what you’d like and nothing stood in your way. How many of the following things would you WANT to do? (Mark all that apply.) Graduate from college (four-year program)”, with responses of yes or no.

We additionally assessed other educational beliefs (e.g., “How satisfied are you with your educational experiences?”). These covered a broad array of academic values and experiences, and the full list can be seen in Supplemental Table 1.

2.3. Well-being Outcomes

Two metrics examined well-being. First, a self-esteem scale was comprised based on the extent to which adolescents agreed with the following statements: I take a positive attitude toward myself; I feel I am a person of worth, on an equal plane with others; I am able to do things as well as most other people; On the whole, I’m satisfied with myself. Responses ranged from 1 (disagree) to 5 (agree) for each item. Scores were summed to create a total self-esteem score, range: 4 to 20. An outcome of low self-esteem was also assessed at the lowest decile (score<10). In addition to self-esteem, we also examined general happiness using the following item: “Taking all things together, how would you say things are these days—would you say you’re very happy, pretty happy, or not too happy these days?”

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2.4. Personal Value/Belief Outcomes

We examined several personal values and beliefs (e.g., “How important is each of the following to you in your life? Having a good marriage and family life”). These can also be seen in Supplemental Table 1, along with p-values for the chi-square between smoking/vaping group and the outcome with FDR correction.

2.5. Demographics

Demographic factors were included in analyses, namely sex (male/female/other [available only in 2021 and censored from Table 1 for confidentiality reasons]); Race/ethnicity (White, Black, Hispanic/Latino, Multiracial, Other); region (Northeast, North Central, South, West); Parental education (Up to Some High School, High School/Some College, College or More); and urbanicity (Metropolitan Statistical Area vs not).

2.6. Statistical Analysis

To examine the distribution of outcomes across vaping/smoking patterns, we used survey-weighted prevalences. Then, survey-weighted logistic regressions examined the magnitude of the links between vaping/smoking patterns and our outcomes, unadjusted and then adjusting for demographics.

3. Results

Table 1 shows the distribution of respondents by sex, race/ethnicity, geographic region, parental education, and urbanicity by vaping/smoking group. Between 2015 and 2021, 78.7% of students used neither e-cigarettes nor combustible cigarettes, 13.2% used e-cigarettes only (vape-only), 3.7% used combustible cigarettes only (smoke-only), 4.4% used both e-cigarettes and combustible cigarettes. Male students were more likely than female students to engage in vaping (53.8% male), smoking (54.5%), or both (60.8%). Among students who vape-only, 67.2% were white, 18.3% were Hispanic/Latino, 5.3% were Black, 4.6% were Multiracial, and 4.6% were other races/ethnicities including Asian, and Native American. Among students who vape-only, 57.9% had at least one parent with a college degree..

Table 2 depicts the association between vaping/smoking patterns and educational outcomes. Students who vaped-only (OR:1.49, CI:1.28–1.74), smoked-only (OR:2.50, CI:1.98–3.16), or both (OR:3.03, CI:2.43–3.76) had worse academic performance than non-smoking, non-vaping peers after demographic adjustment.. A similar trend was found when measuring self-rated academic performance. Additionally, students who vaped-only (aOR: 0.74, 95% CI: 0.65–0.85), smoked-only (aOR: 0.42, 95% CI: 0.34–0.52), or both vaped and smoked (aOR: 0.38, 95% CI: 0.31–0.46) had lower expectations of attending a four-year college compared to their non-vaping, non-smoking peers. Patterns were similar for the outcome of desire to attend a four-year college.

Distinct patterns also emerged for educational beliefs. The vape-only (aOR: 1.30, 95% CI: 1.06–1.58), smoke-only (aOR: 1.68, 95% CI: 1.22–2.30), and both (aOR: 1.77, 95% CI: 1.27–2.46) groups were more likely to report being dissatisfied with their educational

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experiences compared to the neither group. Similar findings were reported in negative feelings about going to school, feeling that schoolwork is not/seldom meaningful or important, feeling that courses were dull, feeling that school is not an enjoyable experience, feeling that doing well in school in not important for getting a good job, and the belief that what you're learning is not going to be important later in life. It is important to note that negative beliefs were consistently much higher in the smoke-only group and the group participating in smoking and vaping compared to the vape-only group, for whom associations were often not as strong.

Table 3 depicts the association between vaping/smoking patterns and well-being outcomes. There was no significant difference in low self-esteem between the "neither" group and the vape-only group (aOR: 0.97, 95% CI: 0.77–1.21), the smoke-only group (aOR: 1.32, 95% CI: 0.88–1.98) or the "both" group (aOR: 1.22, 95% CI: 0.80–1.85). Feelings of being "not too happy" significantly differed between the neither group and the vape-only (aOR: 1.17, 95% CI: 1.04–1.32), smoke-only (aOR: 1.99, 95% CI: 1.57–2.53) and both groups (aOR: 1.67, 95% CI: 1.30, 2.15).

Table 4 depicts the associations between vaping/smoking patterns and personal beliefs and values. There were several beliefs and values that did not statistically differ between the different groups. These included the importance of experiencing things in new ways, of finding meaning or purpose, of being a community leader, and of providing your children with better opportunities than you had.. Additionally, there were beliefs that did differ between groups. These include the importance of being successful in your line of work, of having a good marriage/family, of having lots of money, of having time for hobbies/recreation, of having strong friendships, of finding steady work, of contributing to society, of living close to relatives, of getting away from the area in which you live, and of correcting social and economic inequalities. However, patterns between smoking/vaping groups were deeply inconsistent. For some outcomes (e.g., the feeling that being successful in your line of work was not important), the vaping group's association (in this example, OR = 0.65, 95% CI: 0.46–0.94) was in the opposite direction of the associations seen among the smoking/"both" groups (e.g., smoking-only OR=2.29, 95% CI: 1.48–3.56). For other outcomes, e.g., the importance of having lots of money, all groups had associations similar in direction and magnitude (OR range: 0.58–0.78). Ultimately, however, there was little consistent comparability between the belief patterns seen among those using e-cigarettes and those engaged in combustible cigarette use.

4. Discussion

Generally, adolescents who reported only vaping had worse educational outcomes than non-smoking and non-vaping peers, but smoking-only or smoking and vaping groups fared worst in various metrics including academic performance, future educational plans, and attitudes towards school. As it pertains to well-being, vaping was not related to self-esteem, but students who smoked or vaped reported lower happiness. However, this association was stronger among those who smoked than among those who vaped. Regarding personal values and beliefs, the results were relatively inconsistent. There were many items where no significant difference was observed between the groups of students, and for outcomes that

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did exhibit differences across smoking/vaping groups, those engaged in e-cigarette use had different belief patterns than those using combustible cigarettes.

The current findings suggest that e-cigarettes are not associated with the same personal, educational, and well-being risk factors as cigarette use, despite frequent comparisons in the literature. While vaping appears less associated with certain outcomes than cigarette smoking, this also means that students who vape may not be identified as easily as their cigarette-smoking peers. Given the added challenges of targeting adolescents engaged in vaping, as well as vaping's high prevalence among adolescents, prevention efforts must be complex and universal. An urgent, comprehensive response to elevated vaping among adolescents may include education and brief counseling to prevent vaping onset, as well as complex multimodal efforts to help adolescents stop vaping (Berg et al., 2021; Force, 2020). Vaping cessation approaches can involve digital technologies (e.g., text message-based quitting programs), group counselling, or social skills training that motivates sustained abstinence from vaping (Adams et al., 2021; Berg et al., 2021; Liu et al., 2020), all of which would help to curtail the high prevalence of adolescent vaping.

Much of the popular appeal of e-cigarettes is rooted in the marketing tactics employed by e-cigarette companies. Adolescents have been increasingly exposed to e-cigarettes advertisements from various sources including social media, television, and retail stores (Marynak et al., 2018; Park et al., 2019). Increased exposure to e-cigarette advertisements on social media is associated with greater risk of vaping (Vogel et al., 2021). E-cigarette manufacturers are aware of the efficacy of advertising to increase sales and have continued to invest, potentially to the detriment of the youth who are most susceptible (Singh et al., 2016). The messaging of these advertisements is complex in their appeal to adolescents, with advertising portraying e-cigarettes as innovative, recreational, fun, and a means to increase social status (Struik et al., 2020). Additionally, manufacturers promote their products as easy to use, discreet, healthier than cigarettes, and affordable (Struik et al., 2020). There is evidence that these strategies are effective, as commonly cited reasons for adopting vaping amongst students includes the popularity amongst their peers, the variety of flavors, and fewer perceived health risks (Donaldson et al., 2021; Park et al., 2019; Tsai et al., 2018). Consistent, enforced efforts to reduce marketing of vaping products and prevent advertisements that could influence adolescents are needed.

Limitations should be considered. Data relied on adolescent self-reporting which may lead to measurement error. Data were cross-sectional; thus, the direction of associations could not be ascertained. Additionally, the Monitoring the Future dataset only included adolescents who were in school. Thus, it did not include students who dropped out of school, who may be at higher risk for vaping and smoking. Vaping item terminology changed over the study years, potentially impacting results.

There are a number of public health implications related to this study. First and foremost, vaping was associated with negative outcomes, such as lower academic performance, that should be addressed, although not all associations were negative. Literature shows that youth who use e-cigarettes are more likely to engage in smoking and other habits (Cassidy et al., 2018; Evans-Polce et al., 2020; Gilbert et al., 2021; Kandel & Kandel, 2014; Keller-

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Hamilton et al., 2021; Pierce et al., 2021). Addressing vaping cessation may assist with smoking cessation and its well-established negative outcomes on the health and well-being of individuals. Public health literature often compares cigarette smoking and e-cigarettes, but this study showed that the associations of these products with educational outcomes, well-being, and personal beliefs and value were not similar. Thus, identification of adolescents at greater risk of vaping may be harder than identification of adolescents at risk for smoking. The harmful impacts of vaping across a variety of domains may worsen over time and follow the inequitable patterns that emerged over decades with cigarette smoking. Continued monitoring of vaping's impact on adolescents is vital to document and counteract these potential trends.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Data Availability:

Monitoring the Future Data are publicly available.

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Highlights

1. Adolescents who reported e-cigarette-only use had better outcomes than their peers who smoked cigarettes.
2. Students who vape-only reported poorer academic performance compared to those who did not vape or smoke.
3. Unhappiness was more common among those who vape or smoke, but low self-esteem was not.

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Table 1:

Study Characteristics by Vaping/Smoking Group

	Vaping/Smoking Group								Chi-Square p-values Between Vaping/Smoking Group and Demographic
	Neither		Vaping Only		Smoking Only		Vaping and Smoking		
	N	%	N	%	N	%	N	%	
Sample Size	18833		3328		851		1003		
Sex									p<.0001
Male	8146	45.6	1686	53.8	410	54.5	565	60.8	
Female	9604	54.4	1442	46.2	356	45.5	346	39.2	
Race/Ethnicity									p<.0001
White	9089	49.6	2181	67.2	470	56.7	678	69.2	
Black	2368	13.4	163	5.3	84	10.8	30	3.8	
Hispanic/Latino	4859	26.6	579	18.3	168	21.4	153	17.2	
Multiracial	801	4.4	154	4.6	33	5.2	52	5.8	
Other	1183	6.1	134	4.6	48	5.9	35	4.0	
Region									p=.0295
Northeast	3700	16.4	773	19.2	138	12.2	211	15.8	
North Central	4042	21.2	796	25.1	196	22.5	217	19.6	
South	7174	39.4	1124	35.3	381	46.6	398	42.9	
West	3917	22.9	635	20.3	136	18.7	177	21.6	
Highest Level of Parental Education									P<.0001
Up to Some High School	1755	11.2	212	7.4	84	13.8	80	9.5	
High School/Some College	6183	36.8	1040	34.7	302	42.9	345	37.2	
College or more	9499	52.0	1888	57.9	366	43.3	483	53.3	
Urbanicity									p<.0001
MSA	15601	81.4	2689	78.5	593	68.8	722	70.0	
Non-MSA	3232	18.6	639	21.5	258	31.2	281	30.0	

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Table 2:

Associations[a] between Vaping/Smoking Patterns and Educational Characteristics

	No vaping or smoking (reference)	Vaping-Only		Smoking-Only		Both	
Outcomes		**OR[b]**	**95% CI[b]**	**OR**	**95% CI**	**OR**	**95% CI**
Getting C's and D's vs A's and B's	1.00	**1.49**	**(1.28, 1.74)**	**2.50**	**(1.98, 3.16)**	**3.03**	**(2.43, 3.76)**
Self-rated performance in school as above average	1.00	**0.73**	**(0.65, 0.81)**	**0.46**	**(0.38, 0.56)**	**0.46**	**(0.37, 0.58)**
Expectation of probably/definitely doing four-year college	1.00	**0.74**	**(0.65, 0.85)**	**0.42**	**(0.34, 0.52)**	**0.38**	**(0.31, 0.46)**
Desire to do four-year college	1.00	**0.78**	**(0.70, 0.88)**	**0.48**	**(0.39, 0.59)**	**0.48**	**(0.39, 0.60)**
Being dissatisfied with your educational experiences	1.00	**1.30**	**(1.06, 1.58)**	**1.68**	**(1.22, 2.30)**	**1.77**	**(1.27, 2.46)**
Feeling negatively about going to school	1.00	**1.50**	**(1.27, 1.78)**	**2.50**	**(1.91, 3.29)**	**2.51**	**(1.93, 3.26)**
Feeling that schoolwork is not/seldom meaningful or important	1.00	**1.54**	**(1.33, 1.78)**	**1.78**	**(1.39, 2.28)**	**1.92**	**(1.36, 2.71)**
Courses feel dull	1.00	**1.47**	**(1.26, 1.72)**	**1.54**	**(1.18, 2.02)**	**2.26**	**(1.76, 2.90)**
Feeling that school is not an enjoyable experience	1.00	**1.50**	**(1.25, 1.80)**	**2.05**	**(1.56, 2.70)**	**2.10**	**(1.53, 2.88)**
Feeling that school is not important for getting a good job	1.00	**1.52**	**(1.15, 2.01)**	**1.78**	**(1.22, 2.60)**	**2.44**	**(1.65, 3.63)**
Feeling that what you're learning is not going to be important later in life	1.00	**1.41**	**(1.23, 1.63)**	**1.51**	**(1.15, 1.99)**	**1.46**	**(1.03, 2.08)**

[a] Adjusting for sex, race/ethnicity, urbanicity, region, and parental education

[b] OR = odds ratio; CI= Confidence Interval

Bolding = significance p<.05

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Table 3:

Associations[a] between Vaping/Smoking Patterns and Well-being Outcomes

	No vaping or smoking (reference group)	Vaping-Only		Smoking-Only		Both	
Outcomes		**OR[b]**	**95% CI[b]**	**OR**	**95% CI**	**OR**	**95% CI**
Lowest Decile of SelfEsteem	1.00	0.97	(0.77, 1.21)	1.32	(0.88, 1.98)	1.22	(0.80, 1.85)
Being “Not too happy”	1.00	**1.17**	**(1.04, 1.32)**	**1.99**	**(1.57, 2.53)**	**1.67**	**(1.30, 2.15)**

[a]Adjusting for sex, race/ethnicity, urbanicity, region, and parental education

[b]OR = odds ratio; CI= Confidence Interval

Bolding = significance p<.05

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Table 4:

Associations[a] between Vaping/Smoking Patterns and Personal Value/Belief Outcomes

	No vaping or smoking (reference group)	Vaping-Only		Smoking-Only		Both	
Outcomes		**OR[b]**	**95% CI[b]**	**OR**	**95% CI**	**OR**	**95% CI**
Belief that being successful in your line of work is only somewhat or not important	1.00	**0.65**	**(0.46, 0.94)**	**2.29**	**(1.48, 3.56)**	**1.71**	**(1.13, 2.59)**
Belief that having a good marriage/family is only somewhat or not important	1.00	**0.71**	**(0.54, 0.94)**	**2.16**	**(1.53, 3.05)**	1.43	(0.94, 2.18)
Belief that having lots of money is only somewhat or not important	1.00	**0.61**	**(0.52, 0.73)**	0.78	(0.59, 1.04)	**0.58**	**(0.41, 0.83)**
Belief that having time for hobbies/recreation is somewhat or not important	1.00	0.82	(0.67, 1.01)	**1.35**	**(1.04, 1.76)**	0.78	(0.54, 1.14)
Belief that having strong friendships is only somewhat or not important	1.00	0.88	(0.66, 1.17)	**1.48**	**(1.05, 2.09)**	1.09	(0.67, 1.77)
Belief that being able to find steady work is only somewhat or not important	1.00	1.20	(0.82, 1.76)	1.56	(0.95, 2.57)	1.58	(0.96, 2.61)
Belief that making a contribution to society is only somewhat or not important	1.00	1.12	(0.96, 1.30)	**1.34**	**(1.02, 1.78)**	1.27	(0.98, 1.65)
Belief that living close to parents/ relatives is somewhat or not important	1.00	1.05	(0.90, 1.23)	1.05	(0.82, 1.36)	**1.57**	**(1.14, 2.18)**
Belief that getting away from the area in which you live is somewhat or not important	1.00	**0.82**	**(0.71, 0.95)**	**0.53**	**(0.41, 0.69)**	**0.55**	**(0.35, 0.86)**
Belief that working to correct social and economic inequalities is somewhat or not important	1.00	**1.19**	**(1.03, 1.38)**	1.03	(0.80, 1.32)	0.91	(0.71, 1.16)

[a] Adjusting for sex, race/ethnicity, urbanicity, region, and parental education

[b] OR = odds ratio; CI= Confidence Interval

Bolding = significance p<.05