

BRIEF COMMUNICATION

Assessing the Social Influences, Self-Esteem, and Stress of High School Students Who Vape

Vedika Jha^{a,*} and Alan Kraguljac^b^aVictoria College, University of Toronto, Toronto, ON, Canada; ^bUniversity of Toronto Schools, Toronto, ON, Canada

Adolescent vaping is rapidly rising in Canada, and e-cigarettes have become the most widely used tobacco product among high school students; 29% of students in grades 10 to 12 reported e-cigarette use in 2019. Vaping among adolescents is a problem because the long-term health consequences of e-cigarettes remain unknown, large numbers of teens are becoming addicted to the harmful drug nicotine, and vaping has been shown to increase risk of initiation of combustible tobacco product use. To address the gaps in the current understanding of adolescent e-cigarette use, this study aims to examine the role of social peer and family influence, self-esteem, and stress on teen vaping. Seventy-nine students in grades 10 to 12 at an independent, co-ed high school in Toronto, Ontario completed an online survey about factors that influence them to vape, and about their perceived self-esteem and stress. Survey data was analyzed using Chi-Square tests and T-tests. Common motivations for vaping included stress relief (70%) and peer influence (60%). Family history of smoking or vaping and the ability to vape indoors also influenced vaping habits. Notably, e-cigarette users reported higher stress levels than non-users, but self-esteem levels were comparable. Our findings suggest that high school vaping prevention strategies should focus on stress reduction and encourage healthy coping strategies. Similar research studies should be conducted in other high schools, and future research should further explore the correlation between stress and adolescent vaping.

INTRODUCTION

The use of e-cigarettes has increased rapidly among high school students in Canada and the US [1]. In Canada, e-cigarette use in grades 10 to 12 tripled from 9% to 29% between 2017 and 2019 [2]. Similarly, in the US, e-cigarette use among high school students rose from 12% to 21% between 2017 and 2018 [3]. Electronic nicotine delivery systems, more commonly known as e-cigarettes or vapes, often contain flavorings, which have been shown to appeal to adolescent users more than traditional cigarettes [4]. However, e-cigarettes also contain several other chemicals, and many contain nicotine, an addictive and harmful substance [5]. Since vapes were first launched

in 2003, more than 460 different e-cigarette brands have been introduced [5].

Increased vaping among adolescents is a societal and public health concern because the long-term health effects of vaping are mostly unknown. Research conducted on the short-term health effects of vaping have shown that vaping can cause lung injury and tissue destruction [6]. Many vapes also contain the addictive drug nicotine, which can lead to a nicotine dependence [7], excessive vaping [8], and cardiovascular complications [9], even without using other nicotine products. Additionally, adolescent use of e-cigarettes has been shown to increase the risk of initiating combustible tobacco product consumption, which poses many well established and serious

*To whom all correspondence should be addressed: Vedika Jha, Life Sciences, Victoria College, University of Toronto, Toronto, ON; Email: vedika.jha@mail.utoronto.ca.

Abbreviations: NIDA, National Institute on Drug Abuse; US, United States of America; APA, American Psychological Association.

Keywords: Vaping, E-cigarettes, Adolescents, Mental Health, Stress, Self-Esteem

health risks [10].

The growing literature on what motivates young adults to vape cite external factors such as peer influence, social image, and perceived lower health risks of vapes compared to cigarettes [1,11,12]. By contrast, there are fewer studies on the intrinsic characteristics, such as mental health and stress levels, of teens who vape. Studies conducted among university students found correlations between impulsivity, low self-esteem, and e-cigarette use [13], as well as high anxiety and e-cigarette dependence [14]. As best as we can determine, similar studies have not been conducted at a high school level. Additionally, studies on adolescent vaping in conjunction with stress have not been conducted.

This study aims to assess the vaping patterns of teen vapers at a Toronto high school, and examines the role of peer and family influence, self-esteem, and stress. The study adds to the growing literature surrounding adolescent vaping and mental health and is the first study to explore the relationship between teen vaping and stress. A greater understanding of motivations for teen vaping can inform preventative strategies to curb vaping among teens.

METHODS

We conducted the survey within an independent, co-ed high school in Toronto, Ontario with 360 students in grades 10 to 12. The only inclusion criterion was being enrolled in high school; both vapers and non-vapers were surveyed. Within this population, 79 students (22%) agreed to participate in the study. Students completed an informed consent form and a 5-part close-ended survey (see Appendix A) on Google Forms using their personal laptops. Their anonymous responses were automatically recorded on a Google Sheets database. This survey was approved by the University of Toronto Schools' Ethics board.

We adapted survey questions from the 2019 *Environics Research* and *Health Canada* "Vapers Panel Survey" [15]. The survey had five sections. Sections II to IV were completed by vapers only. Section I assessed demographics and family history of smoking or vaping. Section II assessed vaping habits, including details of vaping location and vaping patterns, to better understand the population of vapers. Section III asked participants to choose from a list of factors that influenced them to vape such as social image, stress relief, and peer or family influence. Participants also rated each factor's influence on a five-point Likert Scale. Section IV asked participants about peer vaping patterns to assess the influence of peers. Section V measured self-esteem and stress using the Rosenberg Self-Esteem Scale [16] and the *American Psychological Association* (APA) Perceived Stress Scale [17]. We de-

finied "regular vaping" as per the 2019 *Health Canada* definition: at least once a week for a period of 4 weeks in the past year [15]. We calculated medians, averages, and standard deviations for all quantitative variables, used Chi square tests to assess demographic differences between vapers and non-vapers, and used T-tests to assess the difference in stress and self-esteem levels of vapers and non-vapers. All tests used a critical value of $p < 0.05$.

RESULTS

Demographics

Table 1 displays survey demographics. Of the 79 participants, 20 (25%) had vaped regularly in the past year, while 59 (75%) were non-vapers or vaped infrequently. The mean age was 16.4 overall and similar between the vapers and non-vapers. Twelve of the 20 (60%) vapers were female, but sex differences were not statistically different ($p = 0.32$). Family members' history of smoking or vaping was more common in vapers (9 or 45%), compared to 15% (9) for non-vapers ($p = 0.006$).

Vaping Habits

In order to understand underlying factors that may influence teenagers to vape, participants who vaped were asked about their vaping habits. Nineteen of the 20 (95%) vapers started vaping within the past year. Nine vapers (45%) vaped primarily after school, and 13 vapers (65%) vaped primarily inside their home. Every respondent's vape contained nicotine. Notably, 10 (50%) of the vapers had recently quit, either temporarily or permanently. An additional 6 (30%) planned to quit in the near future.

When asked about peer vaping habits, 13 vapers (65%) had used a friend's vape before buying their own, and 3 (15%) continued to use a peer's vape regularly without buying their own. Additionally, 12 (60%) respondents had peers who tried using the respondent's vape before buying their own.

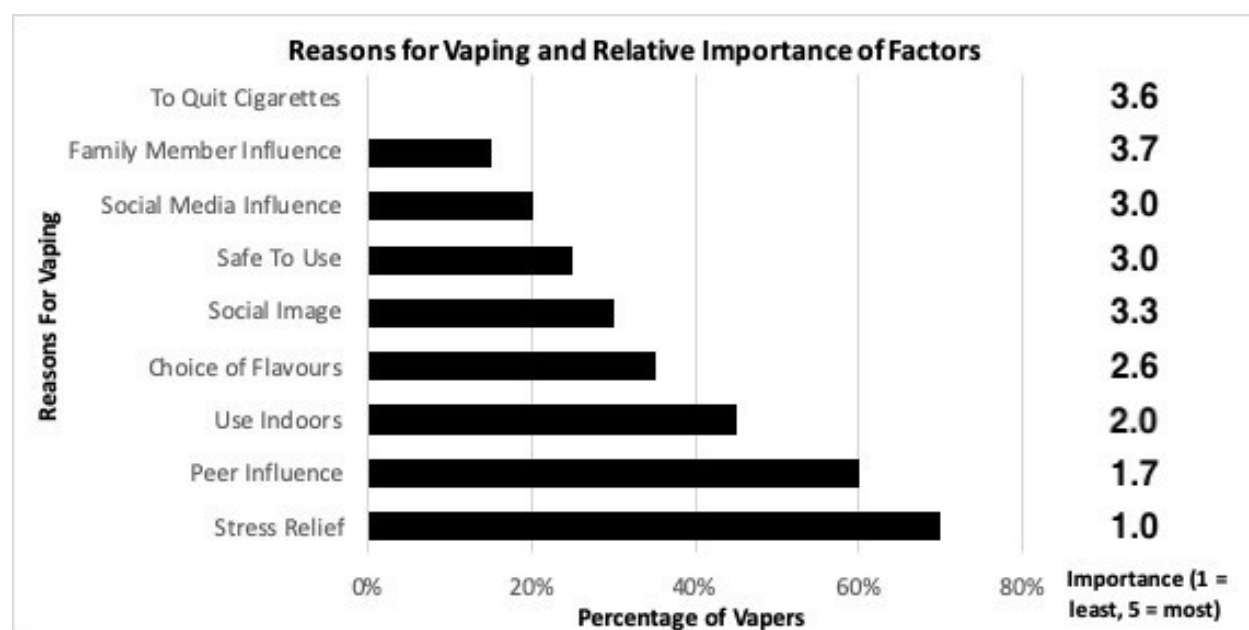
Reasons for Vaping

Participants were asked to choose from a list of factors that may influence them to vape and rate each factor on a scale of 1 to 5: "1" meaning no influence and "5" meaning maximum influence (Figure 1). "Stress relief" and "friends vaping" (or peer influence) were the most popular reasons for vaping, each listed by 70% and 60% of participants, respectively. These factors were followed by "use indoors" (45%) and "flavor choice" (35%). Few respondents listed "Use on social media" as a contributing factor (20%), and "Family vaping" was not a popular factor (15%). No respondents vaped in order to quit cigarettes.

Table 1. Age, Gender, and Family History of Vapers and Non-Vapers.

Variable	Total (N=79)	Non-Vapers (N=59)	Vapers (N=20)	Chi square (vapers vs non-vapers)
Mean Age	16.38 (0.91)	16.60 (0.96)	16.70 (0.66)	
Gender				
Male	36 (46%)	29 (49%)	7 (35%)	
Female	41 (52%)	29 (49%)	12 (60%)	
Other	2 (2%)	1 (2%)	1 (5%)	1.639*
Family history of smoking or vaping				
No	61 (77%)	50 (85%)	11 (55%)	
Yes	18 (23%)	9 (15%)	9 (45%)	7.512**

Note: Data are presented as mean (SD) for age and as N (%) for categorical variables. * $p > 0.05$, 2 degrees of freedom, not significant. ** $p < 0.05$ 1 degree of freedom, significant.

**Figure 1.** Reasons for Vaping and Relative Importance of Factors.

Self-Esteem and Stress

All participants completed the Rosenberg Self-Esteem Scale and the *APA* Perceived Stress Scale to investigate if vaping correlated with mental health traits. There was no significant difference in the self-esteem scores between vapers and non-vapers ($p = 0.6356$) (Figure 2). However, there was a difference in the stress scores: vapers were more stressed than non-vapers ($p = 0.0409$) (Figure 3).

We explored this correlation further by dividing the vaping group into current vapers and vapers who quit ($N=10$ for each). We then compared stress scale scores between the three groups in three different t-tests (Figure 3). None of the comparisons yielded a significant difference, most likely due to small sample size.

DISCUSSION

This study aimed to assess the influences and mental health characteristics of adolescent vapers. We found that adolescents who vape at this high school are primarily motivated to vape by peer influences and for stress relief. Notably, teens who vape reported higher stress levels than non-vapers. The highest levels of reported stress were among teens who quit vaping recently. Family history of smoking or vaping or the ability to vape indoors also influenced their vaping habits. There was no significant difference in the self-esteem levels of vapers and non-vapers. This observation differs from previous findings among college age vapers, which found that vapers had lower self-esteem than non-vapers on the Rosenberg Self-Esteem Scale [13].

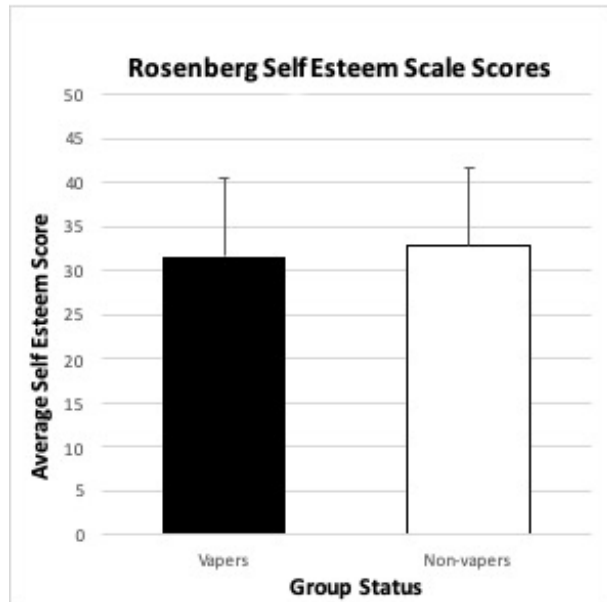


Figure 2. Rosenberg Self-Esteem Scale Scores.

Stress relief was the most commonly cited reason for vaping and had the second highest rated influence (Figure 1). This finding suggests a strong connection between vaping and stress among adolescents. Interestingly, very few studies consider stress relief as a factor when assessing why teens vape. However, stress is a well-established determinant of cigarette uptake among teens [18-21]. Finkelstein et al. found that higher perceived stress among students in grades 7 to 12 was significantly correlated with smoking initiation [20]. Booker et al. found similar results among 6th graders, where stress and stressful life events were associated with intention to smoke [21]. This may be the case among teenage vapers as well. Future studies should continue assessing the linkage between stress relief and vaping.

Interestingly, although 70% of vapers said they vaped for stress relief, vapers reported significantly higher stress than non-vapers (Figure 3). Thus, even if teens are vaping for stress relief, they continue to report higher levels of stress than non-vapers. Long term cigarette use increases stress levels among adolescents, especially with frequent use [18,22]. Byrne et al. surveyed 6579 high school students and followed up with them after 12 months, finding that non-smokers who started smoking were significantly more stressed than those who remain non-smokers [19]. Although cigarette smoking is commonly believed to relieve stress, in fact long term use increases mood swings and heightens stress levels [23]. This may be due to nicotine's ability to both stimulate and desensitize nicotinic acetylcholine receptors, which alter how stress response pathways function [24]. Since high stress levels are a common determinant of cigarette uptake, the correlation may also go the other way. The same question may be

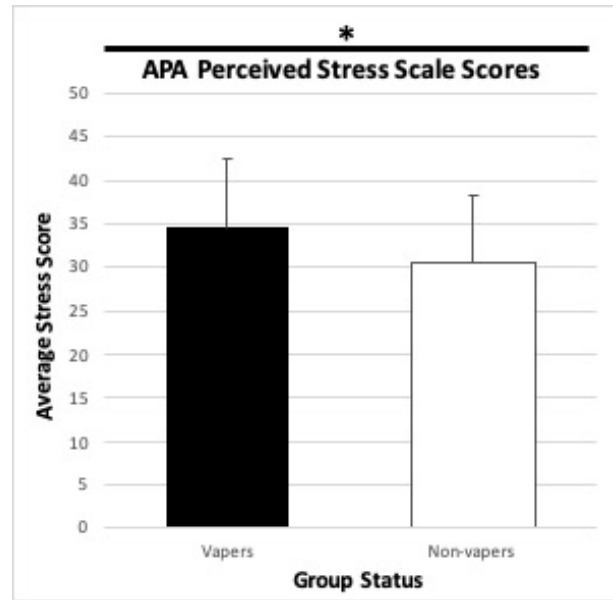


Figure 3. APA Perceived Stress Scale Scores.

posed for vaping: do high stress levels lead to uptake of vaping or does vaping lead to high stress levels?

Peer influence was the second most cited reason for vaping and had the highest rated influence (Figure 1), consistent with other studies [1,12]. Indeed, the majority of survey respondents had shared vapes among their peers. Peer influences have also been documented as a strong determinant of teenage cigarette initiation and continuation in various countries [25].

Family history was a significant determinant of teen vaping. Family history of smoking is well recognized as a strong determinant of adolescent cigarette uptake [26]. Additionally, socio-economic status, which is connected to family history, has also been identified as a predictor of e-cigarette use among youth [27]. Thus, despite the respondents rating family history as relatively unimportant, it may be a major determinant of teen vaping decisions.

Limitations

This study expands the relatively limited number of quantitative studies on underlying factors that motivate adolescent vaping. However, there are two main limitations to this study. First, we had a small sample size of 360 and a low survey response rate of 22%. A larger sample size is required to examine differences with greater statistical reliability, or to conduct more advanced statistical tests such as multivariate linear and logistic regressions. For example, the p-value when comparing stress of ex-vapers and never vapers ($p = 0.053$) approached significance with a small sample size and would be confirmed or refuted with a larger number of observations. Despite the small sample size, this survey still yielded

significant results and can serve as a framework for larger studies in the future.

Secondly, half of the vaping respondents reported quitting recently. Thus, we were unable to answer key questions, such as “In the past 30 days, how many days have you vaped?” or “Are you addicted to vaping?”. These questions would allow us to understand if someone were a casual vaper or addicted to vaping and doing it every day. When answering questions about why they vape, they were answering in retrospect, which may have added recall bias.

Implications for Policy and Research

These findings point to possible interventions to reduce uptake of vaping by students, or to help current vapers quit. Peer influence plays a key role in teen vaping uptake, which suggests that students should be educated on how to combat peer influence and pressure when subtle or implicit.

Our findings show the connection between stress and uptake. Highly stressed teens may vape as an outlet for stress relief and then grow dependent. Thus, an important aspect of teen vaping prevention and cessation may be positive mental health initiatives, including support and guidance programs that provide students with more healthy ways of coping with their stress than vaping. This approach is related to other youth e-cigarette prevention programs, such as “CATCH My Breath,” which involves discussing motivations for vaping and exploring possible alternatives to satisfying these motivations [28]. Such an approach may benefit from a specific discussion on mental health and coping strategies.

Similar research should be conducted in other educational institutions to further understand adolescent motivations for vaping and how vaping correlates to stress and self-esteem. Further research is required to explore the correlation between stress and vaping, especially among adolescents. Along with survey-based research, clinical studies measuring cortisol levels could help quantify the stress of vapers or the impact of intervention programs. Study designs would need to consider the direction of effect: if vaping elevates stress levels in adolescents or are adolescents with higher stress levels more likely to start vaping in the first place. Studies should consider also how quitting vaping affects stress levels of adolescents and their mental health overall.

CONCLUSION

Our findings suggest that it would be useful for high schools to implement interventions aiming to prevent students from vaping and encourage current vapers to quit. These interventions should focus on mental health and stress levels of students, as well as addressing peer

pressure. This study shows a novel correlation between high stress levels and e-cigarette use among adolescents, which should be explored further in future research. The study also expands the relatively limited number of quantitative studies on underlying factors that motivate adolescent vaping. Additionally, this study can be used as a template to inform similar studies in other schools. Such research will expand the evidence-base to help curb the rapid rise in adolescent vaping.

REFERENCES

1. Tsai J, Walton K, Coleman BN, Sharapova SR, Johnson SE, Kennedy SM, et al. Reasons for electronic cigarette use among middle and high school students. *MMWR Morb Mortal Wkly Rep*. 2018 Feb;67(6):196–200.
2. Health Canada [Internet]. Ottawa: Canadian Student Tobacco, Alcohol and Drugs Survey; c2019 [cited 2020 May 20]. Available from: <https://www.canada.ca/en/health-canada/services/canadian-student-tobacco-alcohol-drugs-survey/2018-2019-summary.html>
3. Rimmer A, Iacobucci G. Vaping: CDC investigation continues after patient dies from severe lung injuries. *BMJ*. 2019 Aug;366:15320.
4. Harrell MB, Loukas A, Jackson CD, Marti CN, Perry CL. Flavored Tobacco Product Use among Youth and Young Adults: What if Flavors Didn't Exist? *Tob Regul Sci*. 2017 Apr;3(2):168–73.
5. National Institute on Drug Abuse. Vaping Devices (Electronic Cigarettes). *Drug Facts* [Internet]. 2020 January [cited 2020 May 20]. Available from <https://www.drugabuse.gov/publications/drugfacts/vaping-devices-electronic-cigarettes>
6. Kaur G, Pinkston R, Mclemore B, Dorsey WC, Batra S. Immunological and toxicological risk assessment of e-cigarettes. *Eur Respir Rev*. 2018 Feb;27(147):1701–19.
7. Case KR, Mantey DS, Creamer MR, Harrell MB, Kelder SH, Perry CL. E-cigarette- specific symptoms of nicotine dependence among Texas adolescents. *Addict Behav*. 2018 Sep;84:57–61.
8. Barrington-Trimis JL, Leventhal AM. Adolescents' use of “Pod Mod” e-cigarettes— urgent concerns. *N Engl J Med*. 2018 Sep;379(12):1099–102.
9. Shi H, Fan X, Horton A, Haller ST, Kennedy DJ, Schiefer IT, et al. The effect of electronic-cigarette vaping on cardiac function and angiogenesis in mice. *Sci Rep*. 2019 Mar;9(1):4085.
10. National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on the Review of the Health Effects of Electronic Nicotine Delivery Systems. *Public Health Consequences of E-Cigarettes*. Eaton DL, Kwan LY, Stratton K, editors. Washington (DC): National Academies Press (US); 2018 Jan 23.
11. Ayers JW, Leas EC, Allem JP, Benton A, Dredze M, Alt-house BM, et al. Why do people use electronic nicotine delivery systems (electronic cigarettes)? A content analysis of Twitter, 2012-2015. *PLoS One*. 2017 Mar;12(3):e0170702.
12. Wallace LN, Roche MJ. Vaping in context: links among e-cigarette use, social status, and peer influence for college

- students. *J Drug Educ.* 2018 Nov;48(1–2):36–53.
13. Grant JE, Lust K, Fridberg DJ, King AC, Chamberlain SR. E-cigarette use (vaping) is associated with illicit drug use, mental health problems, and impulsivity in university students. *Ann Clin Psychiatry.* 2019 Feb;31(1):27–35.
 14. Zvolensky MJ, Mayorga NA, Garey L. Worry, anxiety sensitivity, and electronic cigarettes among adults. *Psychiatry Res.* 2018 Nov;269(1):321–7.
 15. Environics Research. Vapers panel survey to measure attitudes and behaviours regarding vaping products. Ottawa (ON): Health Canada; 2019. ISBN: 9780660304014.
 16. Rosenberg M. *Society and the Adolescent Self-Image.* Revised edition. Middletown (CT): Wesleyan University Press; 1989.
 17. American Psychological Association. *Stress in America: Are Teens Adopting Adults' Stress Habits?* Washington DC. 2014 Feb.
 18. Holliday E, Gould TJ. Nicotine, adolescence, and stress: A review of how stress can modulate the negative consequences of adolescent nicotine abuse. *Neurosci Biobehav Rev.* 2016 Jun;65(1):173–84.
 19. Byrne DG, Byrne AE, Reinhart MI. Personality, stress and the decision to commence cigarette smoking in adolescence. *J Psychosom Res.* 1995 Jan;39(1):53–62.
 20. Finkelstein DM, Kubzansky LD, Goodman E. Social status, stress, and adolescent smoking. *J Adolesc Health.* 2006 Nov;39(5):678–85.
 21. Booker CL, Gallaher P, Unger JB, Ritt-Olson A, Johnson CA. Stressful life events, smoking behavior, and intentions to smoke among and multiethnic sample of sixth graders. *Ethn Health.* 2004 Nov;9(4):369–97.
 22. Siqueira L, Diab M, Bodian C, Rolnitzky L. Adolescents becoming smokers: the roles of stress and coping methods. *J Adolesc Health.* 2000 Dec;27(6):399–408.
 23. Parrott AC. Does cigarette smoking cause stress? *Am Psychol.* 1999 Oct;54(10):817–20.
 24. Picciotto MR, Brunzell DH, Caldarone BJ. Effect of nicotine and nicotinic receptors on anxiety and depression. *Neuroreport.* 2002 Jul;13(9):1097–106.
 25. Liu J, Zhao S, Chen X, Falk E, Albarracín D. The influence of peer behavior as a function of social and cultural closeness: A meta-analysis of normative influence on adolescent smoking initiation and continuation. *Psychol Bull.* 2017 Oct;143(10):1082–115.
 26. U.S. Department of Health and Human Services. *Smoking Cessation. A Report of the Surgeon General.* Atlanta (GA): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2020.
 27. Springer AE, Davis C, Van Dusen D, Grayless M, Case KR, Craft M, et al. School socioeconomic disparities in e-cigarette susceptibility and use among central Texas middle school students. *Prev Med Rep.* 2018 May;11:105–8.
 28. Kelder SH, Mantey DS, Van Dusen D, Case K, Haas A, Springer AE. A middle school program to prevent e-cigarette use: a pilot study of “CATCH My Breath.”. *Public Health Rep.* 2020 Mar/Apr;135(2):220–9.

Influences and Mental Health of Adolescents Who Vape 1

Appendix A: Participant Consent Form and Survey

Student Informed Consent Form

Project Title: Assessing the Social Influences, Self Esteem, and Stress of High School Students Who Vape

Primary Researcher

Vedika Jha

Supervisor

Alan Kraguljac

Why am I doing this study?

I'm conducting this study in order to assess why students chose to vape, as well as the correlation between those who vape and other factors, such as stress levels and self esteem. Understanding these characteristics will give us more insight into what can be done to prevent students from vaping.

What will happen during this study?

During this study, you will be sent an anonymous Google Form containing a series of multiple choice questions. It should take no more than 20 minutes to complete, and you may choose to not respond to any questions if you are uncomfortable with them.

What are the possible benefits of participating in this study?

This study may provide you with a safe space for self reflection, where it is completely anonymous. The survey may also help you learn more about the risks of vaping. Overall, there are benefits because you are helping expand the body of knowledge on the subject.

What are the possible negative aspects of participating in this study?

If you think filling out some questions will make you feel uncomfortable or judged, you do not have to provide an answer for those questions. However, know that all your answers are anonymous, and will be kept in a password protected Google Sheets with no identification as to who you are.

Who will know about what I did in this study?

The responses that you give in the questionnaire will be **completely anonymous and confidential**: no one besides me will see individual responses, and I will still not see the names of those who have filled out the study. Once I have analysed the data, a summary of the findings and general trends will be discussed in the final paper and will be shared with the school community. At no point will anyone be able to access your individual response in the Google Form: they are encrypted and not readily accessible by anyone.

Can I decide if I want to be in this study?

Yes. You can choose if you would like to be in this study. If at first you think you would like to be in this study, and then you change your mind, you can stop at any time without penalty or consequence. If you choose to withdraw at any given point, your data will immediately be deleted from the secure database and will not be used whatsoever.

Influences and Mental Health of Adolescents Who Vape 2

Would you like to participate in this study?Please check one: Yes No

Section 1: Demographics

What grade are you in?

- Grade 10
- Grade 11
- Grade 12

How old are you?

- 16
- 17
- 18
- Other

What is your gender?

- Male
- Female
- Other
- Prefer not to say

Do you have any family history of smoking cigarettes?

(Does anybody in your immediate family or who you live with regularly smoke cigarettes)

- Yes
- No

Do you have any family history of e-cigarette use?

(Does anybody in your immediate family or who you live with regularly use e-cigarettes)

- Yes
- No

Have you regularly used a vape at any point in the past year?

Regular is defined as: At least once a week for a period of four weeks.

- Yes
- **No [If No, form skips to Section 5]**

Section 2: Self vaping habits

When was the first time you vaped? Give an estimate

- [Fill in] mm/yyyy

How long have you been regularly vaping? (Or: for how long did you regularly vape within the past year)

- For less than a month
- 1-6 months
- 6 months-1 year

Influences and Mental Health of Adolescents Who Vape 3

- 1-2 years
 - More than 2 years
- Do you own a vape?
- Yes
 - No
 - Shared
 - Other
- Does the vape you most often use contain nicotine?
- Yes
 - No
 - Other
- If so, when did you buy/get your vape?
- mm/yyyy
- In the past 30 days, on how many days did you vape?
- 0-5
 - 5-15
 - 15-25
 - 25-30
- How often do you vape?
- Daily
 - At least once a week, but not daily
 - Less than weekly, but at least once in the past 30 days
- When in the day do you vape the most?
- Before school
 - During classes
 - During spares/lunch
 - After school
 - Other
- Where do you vape the most?
- Inside school
 - Outside of the school
 - Inside home
 - Outside of home
 - Other
- What is your brand of vape?
- [Fill in]
- How much do you spend on vaping liquids and devices per month?
- \$[Fill in]
- Do you plan to stop vaping?
- Yes
 - No, I do not plan to stop vaping

Influences and Mental Health of Adolescents Who Vape 4

- Other

If you did not vape, how likely is it that you would smoke cigarettes?

1 2 3 4 5
 Not likely at all Not very likely Somewhat likely Very likely Definitely

Section 3: Reasons for vaping

Why do you vape? [*Can check multiple boxes*]

- Use by a friend
- Use by a family member
- Use on social media
- For my social image
- To quit combustible cigarettes
- Can be used indoors
- Safe to use
- Flavour choice
- Stress relief
- Other

Do you consider yourself addicted to vaping?

- Yes
- No
- Other

Rate the following factors from 1 to 5 on how much they influence you to vape

Addiction is not included as an option, even if you only vape right now due to addiction, please answer why you initially began to vape.

1 2 3 4 5
 No influence Little influence Some influence Moderate influence Lots of influence

- Friends vaping
- Family members vaping
- People on social media vaping
- For social image
- To quit combustible cigarettes
- Can be used indoors
- Safe to use
- Flavour choice
- Stress Relief

Section 4: Perceived Peer vaping habits

How many of your immediate friends vape?

- 0
- 1-3
- 3-5

Influences and Mental Health of Adolescents Who Vape 5

- 5-8
- More than 8

How often do you vape with your friends?

- Daily
- At least once a week, but not daily
- Less than weekly, but at least once in the past 30 days

Did you use a friend's vape before you bought your own?

- Yes
- No
- Other

Did any of your friends use your vape before buying their own?

- Yes
- No
- Other

Section 5: Mental Health

If you do not feel comfortable answering the following questions, you may leave any of them blank. Positive mental health is a [REDACTED] priority, if you have any serious concerns with mental health feel free to contact [REDACTED]

Feel free to access this breathing exercise if you feel anxious: <https://www.calm.com/breathe>

Once again, if you do not wish to continue the survey, you may withdraw at any time and your data will be deleted.

Self esteem (Taken directly from the Rosenberg Self Esteem Scale)

Answer the following questions on this scale:

1	2	3	4	5
Strongly Agree	Agree	Neutral	Disagree	Strongly Agree

- On the whole, I am satisfied with myself.
- At times I think I am no good at all.
- I feel that I have a number of good qualities.
- I am able to do things as well as most other people.
- I feel I do not have much to be proud of.
- I certainly feel useless at times.
- I feel that I'm a person of worth, at least on an equal plane with others.
- I wish I could have more respect for myself.
- All in all, I am inclined to feel that I am a failure.
- I take a positive attitude toward myself.

Stress (Taken directly from the *American Psychological Association's* Perceived Stress Scale)

Answer the following on this scale:

1	2	3	4	5
---	---	---	---	---

Influences and Mental Health of Adolescents Who Vape 6

- Never Almost never Sometimes Fairly often Very often
- In the last month, how often have you been upset because of something that happened unexpectedly?
 - In the last month, how often have you felt that you were unable to control the important things in your life?
 - In the last month, how often have you felt nervous and stressed?
 - In the last month, how often have you felt confident about your ability to handle your personal problems?
 - In the last month, how often have you felt that things were going your way?
 - In the last month, how often have you found that you could not cope with all the things that you have to do?
 - In the last month, how often have you been able to control irritations in your life?
 - In the last month, how often have you felt that you were on top of things?
 - In the last month, how often have you been angered because of things that happened that were outside of your control?
 - In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?