

Electronic Cigarette Use in College Aged Students

Jillian A. Rigby, Maria W. McKenna, Joseph R. Troisi II
Psychology Department, Saint Anselm College

Abstract

Electronic cigarette (e-cigarette) use has increased within recent years (Kong, Kurguru, & Krishnan-Sarin, 2017). Young adults began smoking these devices, which promoted an addiction to nicotine (Thorndike, 2019). This study was comprised of 251 undergraduate students. Participants answered questions regarding vaping habits and nicotine addiction. Participants were asked about situational cravings. All participants reported their reason for initiation to vaping and how many of their friends vape. Any participant who reported not vaping was asked their reasons. The current study found a significant difference between cravings in social compared to individual situations, aligning with past research on traditional cigarettes (Piasecki, McCarthy, Fiore & Baker, 2008). There was also a significant difference between the mean Fagerstrom score of those who self-report being addicted to nicotine, compared to the Fagerstrom score of those who report not being addicted. Limitations of this study include a small sample size and an uneven number of males and females.

Keywords: electronic cigarettes, young adults, nicotine, addiction, situational cravings

Introduction

Prevalence of e-cigarette use among high school students has increased to 27.7% within recent years (2018 NYTS Data, 2018). According to Juul, one brand of e-cigarettes, these products were first created in order to assist in smoking cessation programs for individuals who smoked traditional cigarettes (Our mission, 2019). Young adults began smoking e-cigarettes and potentially initiated a nicotine addiction (Thorndike, 2019). Past research has focused on nicotine addiction through the use of traditional cigarettes and supports the claim that nicotine cravings from traditional cigarettes increased in social situations (Dunbar, Schart, Kircher, & Shiffman, 2010). Lucherini, Rooke, and Amos (2019) found smoking and drinking to be highly correlated. Similarly, Erbllich, Montgomery, and Bovbjerg (2009) assessed craving levels of nicotine in adults by displaying three different scenes to participants: neutral scene, alcohol scene, and smoking scene. Erbllich et al. concluded that nicotine cravings were significantly higher after participants viewed the scenes with alcohol and smoking, when compared to the neutral scene. More recently, the use of e-cigarettes and alcohol consumption have been studied (Thrul, Gubner, Tice, Lisha, & Ling, 2019). Thrul et al. found that individuals who drank alcohol were more susceptible to smoking, either a traditional or e-cigarette, even if they do not regularly smoke. They also concluded that the overall perceived pleasure of nicotine increased when consuming alcohol. The present study analyzed vaping habits, situational cravings for nicotine, reasons of initiation to, or abstaining from e-cigarette use.

Method

This study used a convenience sample of 251 undergraduate college students from all graduating classes at a small liberal arts college in New England, and inquired about their vaping behaviors. Participants who indicated they do not use e-cigarettes were asked their reasons for not vaping and did not complete any other surveys. Participants who reported they did use e-cigarettes were asked about their initiation to vaping and if they believe they are addicted to nicotine. All participants were asked how many of their friends vape. Participants who vape completed a survey to assess their craving of nicotine in different situations (Troisi & Ward, 1995) and the Fagerstrom Test for Nicotine Dependence (Heatherton et al., 1991).

Results

Of the participants who reported being addicted to nicotine, there was a mean Fagerstrom score of 3.27 ($SD = 1.27$) compared to those who reported not being addicted to nicotine ($M = 1.1$, $SD = 1.71$), see Figure 1. The difference between the means of the groups for the Fagerstrom score are statistically significant $t(59) = -3.98$, $p < .001$. An Analysis of Variance found significant differences in mean cravings between situations ($F = 400.76$, $p < .000$). Upon further analysis, significant differences were found between particular situations. There was a significant difference between nicotine cravings in social situations compared individual situations, supporting the hypothesis. When measured on a 5-point Likert scale from *none* to *extremely*, an off campus party ($M = 2.39$, $SD = 1.38$) was rated significantly higher for nicotine craving compared to driving alone ($M = 1.75$, $SD = 1.18$, $p < .001$). There was also a significant difference within particular social situations and particular individual situations. Cravings during an off campus party had a mean of 2.39 ($SD = 1.38$) which was significantly higher than cravings at a bar/club/pub ($M = 2.08$, $SD = 1.25$, $p = .003$). Cravings of nicotine while driving alone ($M = 1.75$, $SD = 1.18$) was also significantly higher than cravings upon waking ($M = 1.42$, $SD = .8$, $p = .001$). See Table 1 for the mean craving scores for all 15 situations. Most participants (57%) reported started using e-cigarettes due to social influence, see Figure 2. However, most (70.3%) also reported they would be extremely likely to give up their devices. Even more participants (86.27%) reported they would not switch to traditional cigarettes if their electronic devices were not available. All participants were asked to report how many of their friends use e-cigarettes, and about half (56.2%) reported a few of their friends vape, see Figure 3. Of the participants who do not vape, the most frequently reported reason was potential future health risks, see Figure 4.

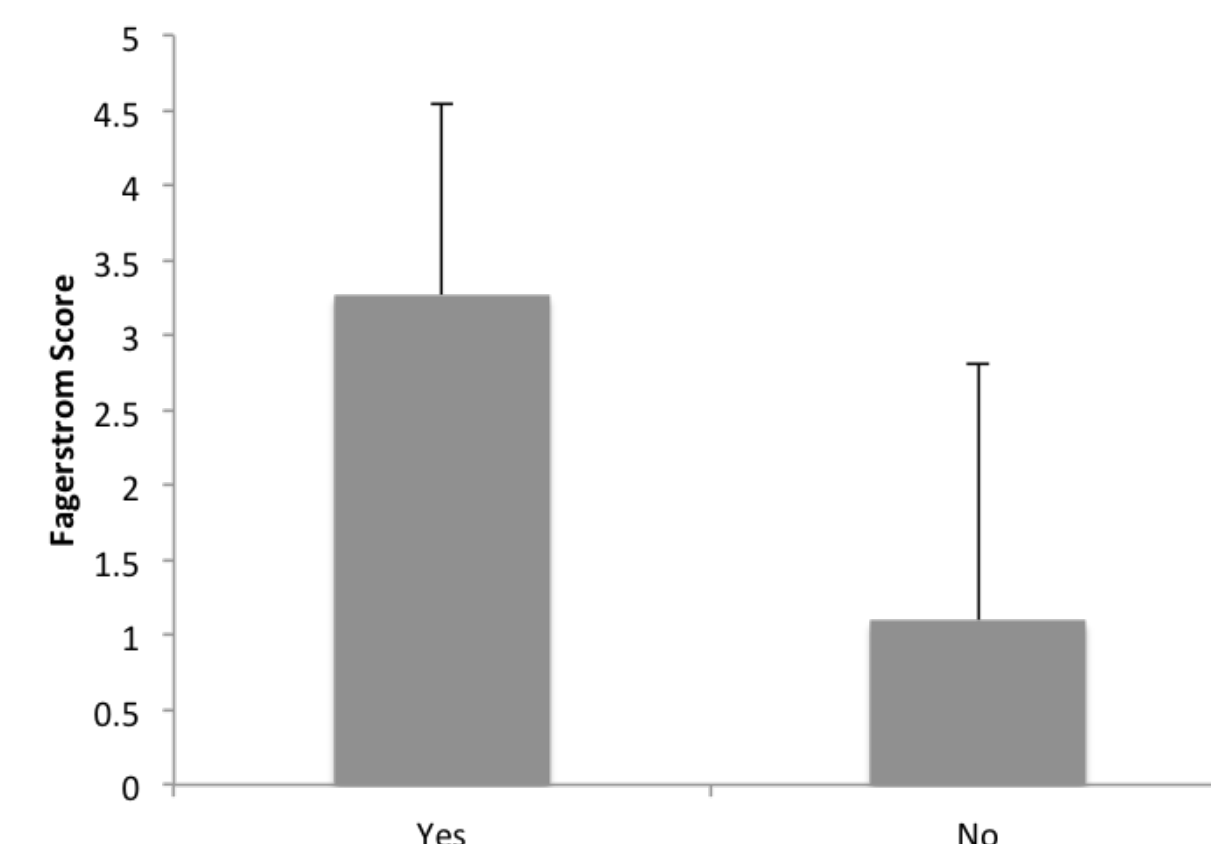


Figure 1. Self-Report of Nicotine Addiction

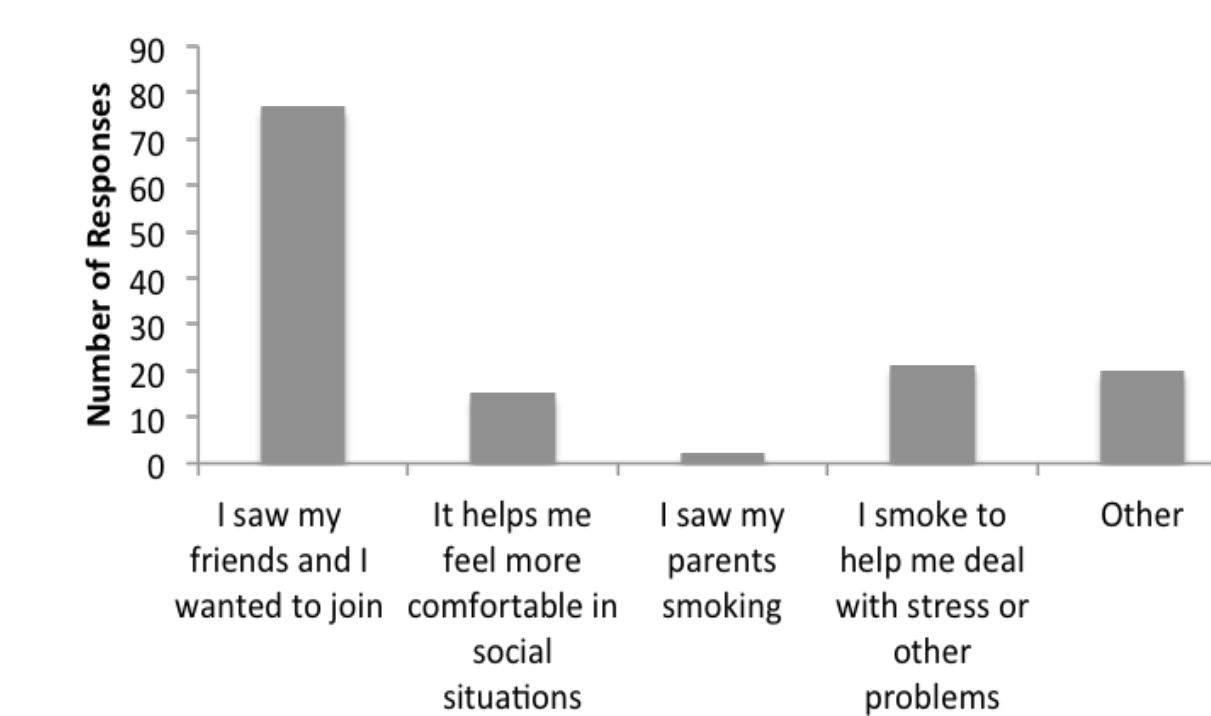


Figure 2. Reason for E-Cigarette Initiation

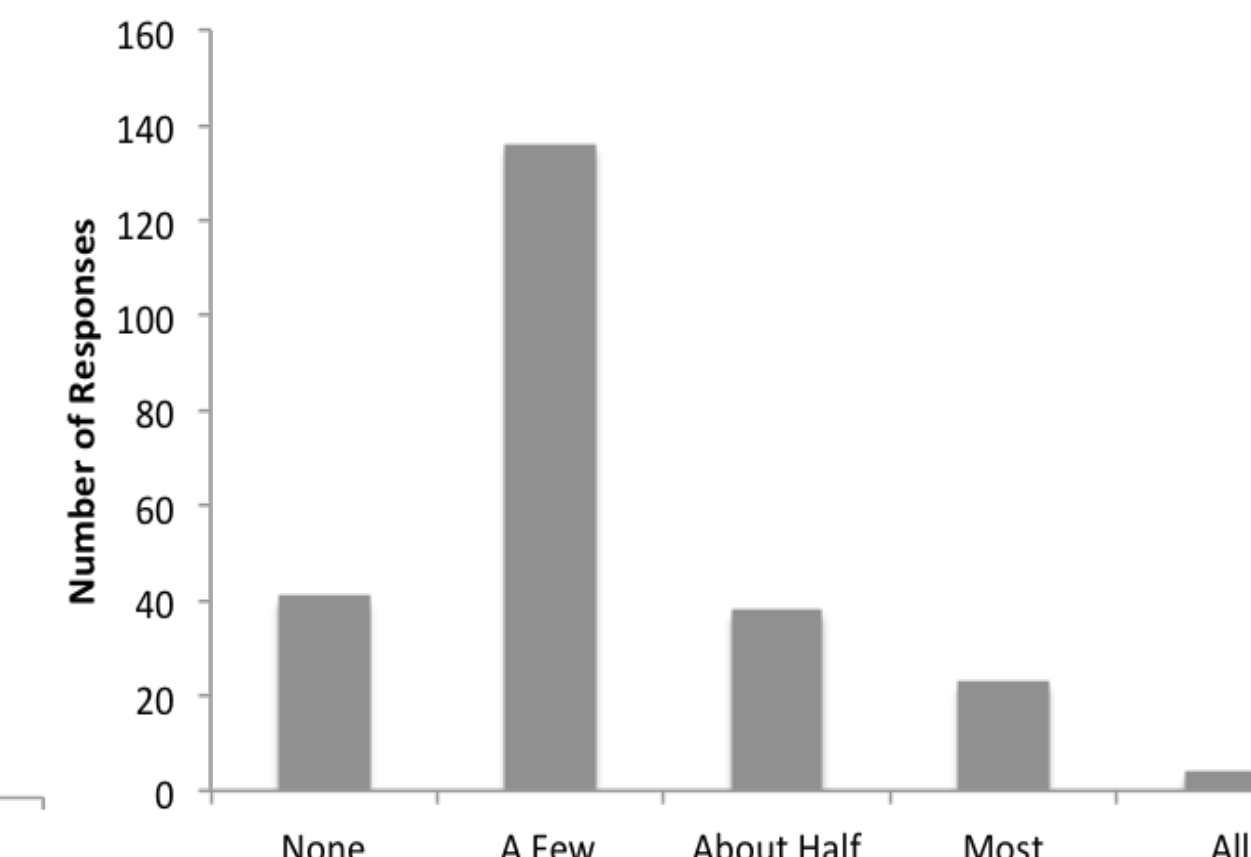


Figure 3. How Many of Your Friends Use Electroic Cigarettes?

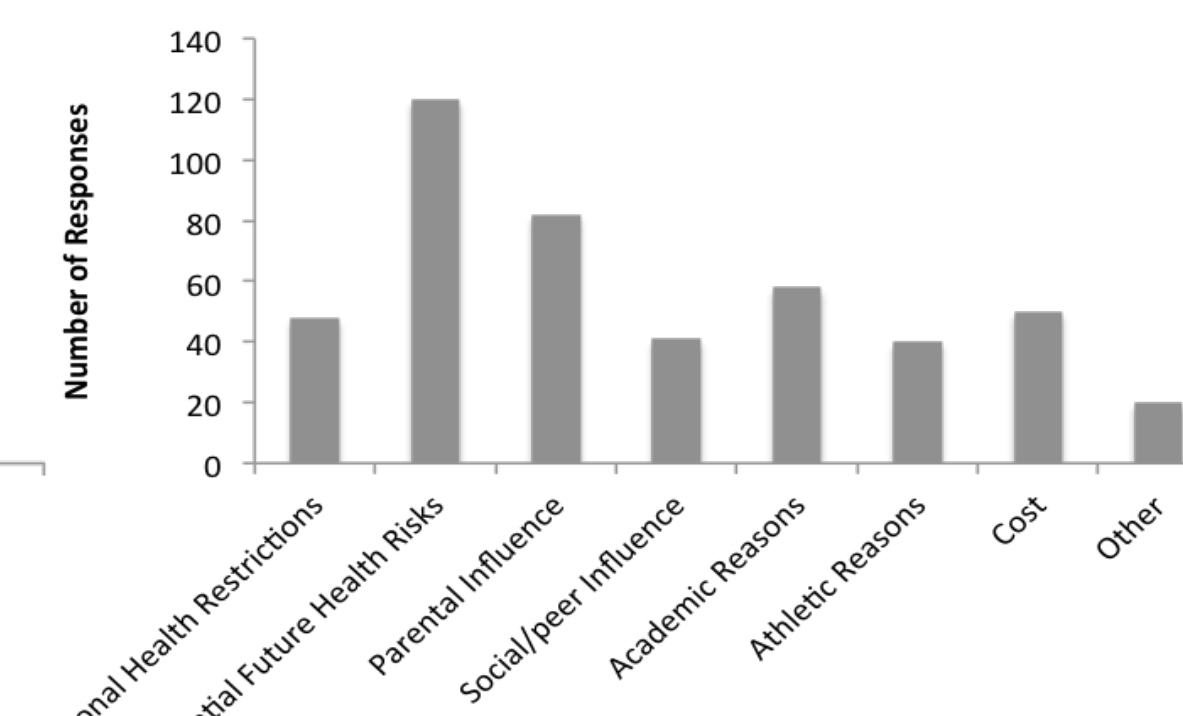


Figure 4. Reasons for Not Using E-Cigarettes

Table 1. Mean (M) and Standard Deviation (SD) of nicotine cravings for all situations.

Situation	M	SD
After meals	1.51	0.91
Before exams	1.59	1.08
After exams	1.75	1.19
Off campus party	2.39	1.38
Upon waking	1.42	0.80
Between classes	1.36	0.76
Sporting events	1.23	0.62
Concert	1.82	1.11
Driving alone	1.75	1.18
Alone in a dorm	1.79	1.25
Homework	1.67	1.1
Watching TV	1.6	0.9
Consuming coffee or tea	1.25	0.68
Mid work day	1.46	0.94
Bar/Club/Pub	2.08	1.25

Note. Ratings of craving for nicotine ranged from 1-5. A score of 1 indicated no craving of nicotine and a rating of 5 indicated an extremely high craving.

Discussion

Based on the findings of this study, some of the hypotheses were supported. This study aligns with past literature regarding higher nicotine cravings in social situations. It was surprising that there was still variability between situations. It was expected that social situations would have significantly higher cravings than individual situations, however it was unexpected for there to be a significant difference between individual situations. One hypothesis was that students would self-report not being addicted to nicotine, yet have a high Fagerstrom score, indicating a high nicotine addiction. This hypothesis was not supported. This came as a surprise because it was assumed that individuals would not be aware of their addiction, but they were. It was also surprising that the majority of participants would be extremely willing to give up their nicotine device. Participants' willingness to give up their device could potentially be due to the increase in media reports regarding harmful effects, as seen in the recent CNN report (Howard, 2019). The hypothesis of individuals smoking traditional cigarettes if e-cigarettes were unavailable was not supported. This was surprising because even if there was another means of fulfilling the nicotine craving in individuals who are addicted, most of them reported they would not turn to traditional cigarettes in order to do so. Limitations of this study included a small sample size and a disproportionate number of males and females. Future research could distinguish between participants who vape regularly and those who occasionally vape and create a system to parallel the categories of light, moderate, and heavy vapers within traditional cigarette smokers. More research will allow for a greater understanding of these devices which can educate others.

References

- Dunbar, M. S., Scharf, D., Kirchner, T., Shiffman, S. (2010). Do smokers crave cigarettes in some smoking situations more than others? Situational correlates of craving when smoking. *Nicotine & Tobacco Research, 12* (3), 226-234. doi: 10.1093/ntr/ntp198
- Erblich, J., Montgomery, G. H., Bovbjerg, D. H. (2009). Script-guided imagery of social drinking induces both alcohol and cigarette craving in a sample of nicotine-dependent smokers. *Addictive Behaviors, 34*, 164-170. doi: 10.1016/j.addbeh.2008.10.007
- Heatherton, T. F., Kozlowski, L. T., Grecker, R. C., Fagerstrom, K. O. (1991). The Fagerstrom Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. *British Journal of Addiction, 86* (9), 1119-1127.
- Howard, J. (2019, September 12). A sixth person died from vaping-related lung disease. Here's what you need to know. *CNN*. Retrieved from <https://www.cnn.com/2019/09/10/health/vaping-outbreak-2019>
- Kong, G., Kuguru, K. E., Krishnan-Sarin, S. (2018). Gender differences in U.S. adolescent e-cigarette use. *Curr Addict Rep, 4* (4), 422-430. doi: 10.1007/s40429-017-0176-5
- Lucherini, M., Rooke, C., Amos, A. (2019). "They're thinking, well it's not as bad, I probably won't get addicted to that. But it's still got the nicotine in it so...": Maturity, control, and socializing: Negotiating identities in relation to smoking and vaping - A qualitative study of young adults in Scotland". *Nicotine and Tobacco Research, 81-87*. doi: 10.1093/ntr/ntx245
- Our mission. (2019). Retrieved from <https://www.juul.com/mission-values>
- Piasecki, T. M., McCarthy, D. E., Fiore, M. C., Baker, T. B. (2008). Alcohol consumption, smoking urge, and the reinforcing effects of cigarettes: An ecological study. *Psychology of Addictive Behaviors, 22* (2), 230-239. doi: 10.1037/0893-164X.22.2.230
- Thorndike, A. N. (2019). E-Cigarette use by young adult nonsmokers: Next-Generation nicotine dependence? *Annals of Internal Medicine, 170* (71). doi: 10.7326/M18-2581
- Thrul, J., Bugner, N. R., Tice, C. L., Lisha, N. E., Ling, P. M. (2019). Young adults report increased pleasure from using e-cigarettes and smoking tobacco cigarettes when drinking alcohol. *Addictive Behaviors, 93*, 135-140. doi: 10.1016/j.addbeh.2019.01.011
- Troisi, J. R., II, & Ward, S. (1995). The effects of social and environmental stimuli on smoking desirability among college students. Presented at the 35th Annual Meeting of the New England Psychological Association, Gordon College, Wenham, MA.
- 2018 NYTS Data: A startling rise in youth e-cigarette use. (2018). Retrieved on October 2, 2020 from <https://www.fda.gov/tobacco-products/youth-and-tobacco/2018->