A Validity Test of the Short Form Vaping Consequences Questionnaire

by
Landon Johnson

A thesis presented to the Honors College of Middle Tennessee State
University in partial fulfillment of the requirements for graduation from
the University Honors College.

Spring 2020

A Validity Test of the Short Form Vaping Consequences Questionnaire

by
Landon Johnson

APPROVED:

_____

Dr. James Tate
Psychology Department

_____

Dr. Rebekka King, Associate Professor
Department of Philosophy and Religious
Studies

Acknowledgements

I would like to express my utmost gratitude to Dr. James Tate for his thorough support of my education throughout the completion of this project. He provided a vast amount of insight regarding the source material and was readily available anytime that I reached out. I would also like to thank Dr. William Langston for his insight and education on methodological best practices which helped me formulate many of the points made in the discussion section. Finally, I would like to thank my family and friends for always lending an open ear and providing continuous support.

Abstract

Middle Tennessee State University (MTSU) students ($n = 14$) from undergraduate classes were asked about their vaping history and dependence, assessed on the reasons for vaping via the Short Vaping Consequences Questionnaire (S-VCQ), exposed to images that elicited negative affect, and then periodically assessed for their current mood and urge to vape. This study was conducted to test the predictive validity of the S-VCQ Negative Reinforcement/Negative Affect Reduction sub-scale by correlating average scores of the Negative Reinforcement/Negative Affect Reduction sub-scale to the urge to vape when experiencing acute negative affect. The results of the study did not find a significant correlation between these two factors, which is a similar result to what Perkins et al. (2012) found in their test of predictive validity for the Smoking Consequences Questionnaire (SCQ). Potential opportunities to improve the procedure and this line of research are evaluated in the discussion portion.

Table of Contents

List of Tables

List of Figures

Introduction

In recent years, the prevalence of tobacco cigarette use has steadily decreased, but the prevalence of a new method of nicotine delivery is increasing markedly in the form of the electronic cigarette (e-cigarette; Mirbolouk et al., 2018). It is particularly concerning to find among younger individuals that up to 16% percent of high school students and 5.3% of middle school students have used some form of e-cigarette (Singh et al., 2015). The use of e-cigarettes is also referred to as vaping because both utilize a device that vaporizes a liquid that is then subsequently inhaled. It is possible that the decrease in tobacco cigarette use prevalence and the concomitant increase in the prevalence of e-cigarette use are products of the belief that vaping offers a cleaner and healthier alternative to smoking tobacco cigarettes while at the same time providing the user with nicotine.

The current research behind the factors that influence e-cigarette use is built on a long history, going back to the 1960's, of using questionnaire measures to assess various factors proposed to be influential in maintaining tobacco cigarette use. Ikard, Green, & Horn (1969) introduced the Reasons for Smoking scale to assess reasons for the maintenance of tobacco cigarette smoking. This was quickly followed by the Occasions for Smoking scale (McKennell, 1970) and the Russell Smoking Motives scale (Russell, Peto, & Patel, 1974). Although the three are based on differing rationales, these measures are very similar in item composition.

Brandon and Baker (1991) re-conceptualized the investigation of reasons for smoking and smoking motivation by assessing subjective expected utilities (SEU) of various potential consequences of smoking a tobacco cigarette. Expectancy theory has

long been successfully used in the area of alcohol research. The core of the theory states that the probability of a given behavior, in this case smoking a tobacco cigarette, is a joint function of an individual's belief that a certain consequence will occur if that behavior is engaged in and the value that the individual places on that consequence. Regarding their goals for the study the researchers state:

> "The goals of the present study were to (a) develop a questionnaire for measuring the SEU of smoking in college students, (b) discover through factor analytic procedures the primary smoking expectancy dimensions, and (c) begin validation of the questionnaire by comparing expectancy scores across smoking status categories, in the manner of prior alcohol expectancy research." (p. 485)

Brandon and Baker (1991) developed the Smoking Consequences Questionnaire (SCQ) which consisted of 80 items that assessed various potential consequences of cigarette smoking. Initial items were taken from questionnaires developed earlier by others (e.g., Best & Hakstain, 1978; Ikard, Green, & Horn, 1969; McKennell, 1970) as well as reports by smokers. The authors sampled positive and negative immediate and long-term smoking consequences. To assess SEU, respondents rated both the desirability of each consequence (-5 to +5 scale) and the likelihood of each consequence (0-9 scale). The SEU is the cross product of the desirability and likelihood ratings. Respondents completed the 80-item measure, and the authors completed a series of analyses. The results of a principal components analysis suggested that four interpretable factors underlie the measure: Negative Consequences, Positive Reinforcement/Sensory Satisfaction, Negative Reinforcement/Negative Affect Reduction, and Appetite-Weight Control. Subscales based on the items composing these four factors demonstrated

excellent internal consistency reliability (α's ≥ .90), and subscale scores differentiated

various groups based on smoking status (i.e., daily smokers, occasional smokers, triers,

and never smokers; males, females).

Since the introduction of the SCQ, it has been modified by a variety of individuals

to better fit specific populations outside of college students such as adult cigarette

smokers (Copeland, Thomas, & Edward, 1995), adult cigarette smokers with psychiatric

conditions (Buckley et al., 2005), African Americans (Jeffries et al., 2004), Spanish-

speaking Latinos (Vidrine et al., 2009), Iranians (Zeidi, Saffari, Chen, & Pakpour, 2014),

Brazilians (de Souza, Araújo, & Souza, 2018), and Persian-speaking adults (Zeidi,

Saffari, Chen, & Pakour, 2004). In addition to adapting the questionnaire to different

populations, it has also been adapted into a shorter version referred to as the S-SCQ

(Miller et al., 2017) and has been used for adults (Rash & Copeland, 2008), adolescents

and young adults (Myers, McCarthy, MacPherson, & Brown, 2003), college students

(Schleicher, Harris, Catley, Harrar,& Goldbeck, 2006), children (Copeland et al., 2007),

African American smokers (Jeffries et al., 2004), and African American light smokers

(Thomas et al., 2009).

In 2017, Miller et al. specifically explored the relationship between experienced

negative affect and various smoking-related outcomes and their relationship to negative

affect reduction expectancies by utilizing Brandon and Baker's (1991) SCQ in a

condensed form (i.e., short form, S-SCQ). They also utilized a battery of other measures

that assessed depression, anxiety, stress, smoking consequences, smoking

experimentation, willingness to smoke, and smoking frequency as smoking-related

outcomes. The main finding was that S-SCQ negative affect reduction expectancies

scores mediated the relationships between negative affect and various smoking outcomes. For example, the authors found that non-smoker students who reported high levels of negative affect were more willing to pick up smoking if they expected smoking to reduce negative affect.

Recently, Morean and L'Insalata (2017) specifically evaluated the psychometric properties of a measure of e-cigarette expectancies by converting the Short Smoking Consequences Questionnaire (S-SCQ) into a version that would be applicable to e-cigarette users and named it the S-VCQ. The researchers administered a 21-item S-SCQ and a 21-item S-VCQ to a large sample ($n = 512$) who reported vaping within the past month. The researchers conducted a series of sophisticated psychometric analyses, including confirmatory factor analysis and scale invariance analyses, on the S-VCQ and found that the same four factors that have been demonstrated to underlie the SCQ (i.e., negative consequences, positive reinforcement/sensory satisfaction, negative reinforcement/negative affect reductions, and appetite-weight control) also underlie the S-VCQ. This was found in a number of sample subgroups such as males, females, and dual users (i.e., those who vape and smoke cigarettes). Moreover, the subscales that assess these four factors demonstrated excellent internal consistency (α's $\geq$.89).

In 2012, Perkins et al. published a study exploring whether participants' expected relief of negative affect by smoking would be predictive of increased cigarette smoking in a controlled laboratory environment where negative affect was induced. The researchers administered an adult version of the SCQ during the participants' initial screening to establish what the participants' expectancy was for the relationship between negative affect and smoking. Just prior to the experimental sessions, the researchers

administered a shorter form of the SCQ called the Immediate Negative Affect Relief (INAR). The experimental sessions consisted of administering tasks designed to induce negative, positive, and neutral affect and assessing mood and smoking behavior. The researchers used Diener and Emmons (1984) Negative Affect subscale to measure negative affect in response to different tasks and overnight nicotine abstinence at various times during these sessions. The researchers also assessed puff frequency and volume. It was found that assessing negative affect reduction expectancies just prior to the experimental sessions via the INAR, as opposed to assessing these during the initial screening via the SCQ, was more predictive of increases in smoking indices during the experience of negative affect. Consequently, Perkins et al.'s (2012) results do not support the predictive validity of the SCQ's Negative Reinforcement/Negative Affect Reduction scale. Due to the similarity between the SCQ and Morean and L'Insalata's (2017) S-SVQ and because the S-SVQ represents a modification of a short form of the SCQ (i.e., S-SCQ), it begs the question as to whether Morean and L'Insalata's (2017) S-SVQ would similarly demonstrate poor predictive ability with respect to vaping-related variables while experiencing negative affect.

Thesis Statement and Hypothesis

This project expanded upon the research done by Morean and L'Insalata (2017), Perkins et al. (2012), and Conklin and Perkins (2005) by using the S-VCQ, negative mood induction methods, and a questionnaire for measuring varying degrees of e-cigarette desire. I hypothesized that individuals who reported, on the S-VCQ, that they use e-cigarettes to reduce negative affect would experience a significantly increased desire to use an e-cigarette when in an acute negative mood situation.

Method

Participants

Participants (*n* = 14; 6 males, 8 females) were recruited through the SONA research pool and other undergraduate courses. The participants must have met the requirements of being a current e-cigarette user and have not used any tobacco-based products (i.e., tobacco cigarettes, smokeless tobacco) in the last month (i.e., last 30 days). Current e-cigarette users were defined as being those had used some form of e-cigarette or vaping apparatus for 3 or more days of each week for the past month. Participants received required research participation credit for their psychology class or extra credit after participating in the study. All participants were either Caucasian (85.7%) or African American (14.3%). With respect to college class, 36% reported being Freshmen, 36% being Juniors, 21% being Seniors, and 7% being Other. The sample represented a variety of college majors (see Figure 1) and was generally diverse. Participants reported the generation of the e-cigarette that they currently use (see Appendix for descriptions of the various generations). As such, 78% of participants reported using one device while 22% of participants reported using multiple devices in the last month. Lastly, participants answered questions that characterized their vaping history, nicotine dependence, and S-VCQ sub-scores (see Table 1).

Materials

Demographic and E-Cigarette History Survey. This author-constructed questionnaire assessed various demographic, as well as e-cigarette/vaping history, variables (see Appendix B). E-cigarette/vaping history questions assessed variables such as the frequency with which participants use their device, the amount (in milliliters) of

e-liquid or number of pods typically used in a two-week span, and the nicotine content (in milligrams) of the e-liquid they use.

   Short Survey of Vaping Consequences (S-VCQ; Morean and L'Insalata, 2017). This 21-item questionnaire (see Appendix C) represents a modification of the S-SCQ to make it applicable to e-cigarette use. It was used to assess the SEUs of various potential consequences of vaping (i.e., Negative Consequences, Positive Reinforcement/Sensory Satisfaction, Negative Reinforcement/Negative Affect Reduction, and Appetite-Weight Control). Participants rated each item twice [(expectancies (i.e. 0 -9) and desirability (-5.0 - +5.0)]. Scores for each item were the cross-products of these two ratings.

   International Affective Picture System (IAPS; Main A standardized set of emotion-evoking pictures that has been used in past studies to elicit positive, negative, and neutral affect. The images developed to elicit negative affect were used in this study.

   Penn State Electronic Cigarette Dependence Index (PSECDI; Foulds et al., 2015). This is a 10-item questionnaire (see Appendix D) designed to measure nicotine dependence in e-cigarette users. Participants indicated the answer to each item on the questionnaire by selecting or filling in a blank that most closely described their own experience. Answers were then set on scales that ranged from 0 – 1 for yes and no questions and 0 – 5 for the remaining questions. The ratings were summed to form a Total Score indicating degree of dependence: 0–3= not dependent, 4–8 low dependence, 9–12 medium dependence, 13+ = high dependence.

   Mood Form. The Mood Form is a 5-item form that measures mood (Diener & Emmons, 1984; see Appendix E). Participants rated each item [experienced mood (i.e. 0 -

10)] to indicate their current mood. All five items measure the participant's current negative affect. The total score is the mean rating across all 5 items.

Vaping Urges Questionnaire (VUQ; Palmer & Brandon, 2018). The VUQ is a 3-item questionnaire designed to assess current craving to use an e-cigarette or vaping device (see Appendix F). This questionnaire was adapted from the Cox, Tiffany, & Christen (2001) Questionnaire of Smoking Urges-Brief (QSU-Brief). Participants rated each item (i.e. 0-6) to indicate current craving for an e-cigarette.

Procedure

In order to standardize the time since each participant's last vape, participants were instructed to vape within one hour of arriving for their scheduled appointment. Following this, participants were escorted to a room where all materials and procedures (i.e., informed consent, questionnaires, and mood induction stimuli) were presented and completed via paper and the computer. Specifically, participants gave informed consent via paper and completed all questionnaire materials via computer. Participants then viewed the IAPS negative affect slides and were periodically asked to rate mood and urge to vape as described below.

Prior to viewing any mood inducing materials, the mood-form and vaping urges self-report were administered to establish a baseline (T_0) score for each participant. During the first stage of the mood induction, participants viewed, one at a time, 25 IAPS slides presented to them for 10 seconds each. After viewing all 25 slides, participants completed the self-report ratings for mood and vaping urges (T_1). Then the participants viewed another series of 20 IAPS slides presented for 10 seconds each and then completed another self-report of mood and vaping urges (T_2). Following this, participants

viewed 40 more IAPS slides presented for 10 seconds each which were followed by self-report ratings of mood and vaping urges (T_3). After the participants completed self-report ratings, they were administered a 5-item content quiz over the slides they had seen. After the participants completed this last quiz they were debriefed. The presentation of the slides was modeled after the Perkins et al. (2012) procedural design for eliciting negative affect.

<div align="center">**Results**</div>

Data Analysis

Analysis of the data was conducted using the SPSS software. It is important to note that all participants ($n = 14$) satisfied all criteria to participate in the study (i.e. 100% of participants had used an e-cigarette on 3 or more days per week for the last month and 0% had used a tobacco based product in the last month). A repeated measures ANOVA was conducted on the mood scores (T_0-T_3) to test whether there was a significant change in mood. Table 2 contains descriptive statistics for mood at the different time-periods. The one-way repeated measures ANOVA ($\alpha = 0.05$), with the Greenhouse-Geisser adjustment, indicated the average mood was not similar throughout the time-periods, $F(1.54, 20.02) = 4.12$, $MSE = 1.88$, $p < 0.05$. The main effect indicates that the mood was not the same for all assessment points. After finding a significant main effect, pairwise comparisons were conducted to test which times were significantly different from one another. To control for Type I error, the Bonferroni procedure was used to conduct pairwise comparisons. The results of this analysis indicated that the T_3 affect mean score was significantly larger than the T_2 affect mean score (see Table 3).

A second repeated measures ANOVA was conducted on the cravings scores (T_0-T_3) to test whether there was a significant change in cravings to use an e-cigarette between time-periods. Table 4 contains descriptive statistics for cravings for the different time-periods. The one-way repeated measures ANOVA ($\alpha = 0.05$), with the Greenhouse-Geisser adjustment, indicated the average cravings did not differ throughout the time-periods, $F(2.06, 26.78) = 0.64$, $MSE = 0.34$, $p = 0.54$. These results indicate that cravings to use an e-cigarette did not significantly change throughout the time-periods.

A Pearson product-moment correlation was calculated between the average mood score for time-periods 1-3 and the average craving score for time-periods 1-3. The baseline scores for each variable were subtracted from each average to control for baseline. Table 5 contains mean and standard deviation for the Pearson correlation between average mood (T_1-T_3) and average craving (T_1-T_3). Average mood (T_1-T_3) and average craving (T_1-T_3) were not significantly correlated, $r(12) = -0.06$, $p = 0.42$ (see Table 6).

A series of Pearson product-moment correlations were conducted between the Negative Reinforcement/Negative Affect Reduction sub-scale scores and the overall average craving (T_1-T_3) and each craving score for each time period (T1, T2, & T3), individually. The Bonferonni procedure was used to establish a pairwise alpha ($p = 0.0125$) to control for Type 1 error. Baseline scores were subtracted from each average score, participant-by-participant, to control for baseline. Table 7 contains the means and standard deviations for the Pearson correlations for the Negative Reinforcement/Negative Affect Reduction subscale, the overall average craving (T_1-T_3), and each craving score for each time-period (T_1, T_2, and T_3). The Negative Reinforcement/Negative Affect

Reduction sub-score was not significantly correlated with the overall average craving, $r(12) = 0.232$, $p = 0.21$. The Negative Reinforcement/Negative Affect Reduction sub-scores were also not significantly correlated with the average craving for T_1, T_2, or T_3, $r(12) = 0.162$, $p = 0.23$, $r(12) = 0.035$, $p = 0.37$, and $r(12) = 0.384$, $p = 0.09$, respectively (see Table 8).

Discussion

Hypothesis Test

The major study hypothesis was that Negative Reinforcement/Negative Affect Reduction sub-scale scores on the S-VCQ would predict vaping craving scores during a period in which negative affect was induced. To test this hypothesis, a series of Pearson correlations between Negative Reinforcement/Negative Affect Reduction sub-scale scores, on the one hand, and various Craving scores, on the other hand, was performed. However, the Pearson product-moment correlations that were calculated between the Negative Reinforcement/Negative Affect Reduction subscale scores and the overall average craving (T_1-T_3) and each craving score for each time-period (T_1, T_2, and T_3) did not produce significant positive correlations. This result therefore does not support the hypothesis and does not indicate substantial predictive validity of the Negative Reinforcement/ Negative Affect Reduction sub-scale.

General Discussion

The purpose of this study was to test the predictive validity of the Negative Reinforcement/Negative Affect Reduction sub-scale of Morean and L'Insalata's (2017) S-VCQ by replicating the main procedure of the Perkins et al. (2012) study that tested the predictive validity of the SCQ. Similar to Perkins et al. (2012), I did not find evidence of

the predictive validity of the S-VCQ's Negative Reinforcement/Negative Affect Reduction sub-scale. However, it is important to note that due to circumstances out of our control, the number of participants in this study ($n = 14$) did not reach the threshold to provide adequate statistical power. Future studies would need to utilize a larger sample size. Furthermore, the IAPS only targets a narrow portion of the general concept of negative affect (i.e., fear and disgust) while the S-VCQ targets a wider range of items that lead to negative affect. In future studies, it would be beneficial to widen the range of the mood induction procedure to elicit more forms of negative affect. Introducing tasks that elicit stress such as an insolvable anagram could potentially provide additional forms of mood induction.

Furthermore, it is also important to address the potential presence of demand characteristics present in the study. The main area of concern to be addressed has to do with the Informed Consent. The description of the procedure and expected findings may have led participants to answer in a way that was consistent with what they believed to be the hypothesis. Before evaluating potential strategies that could be taken to reduce the effects of demand characteristics in this type of study, it is important to acknowledge that both the primary investigator and faculty advisor observed that most participants did not take the time to thoroughly read the extensive Informed Consent document. Also, the results indicate that potential demand characteristics did not have this affect since cravings did not significantly change throughout the study while negative mood did. If the contamination had occurred, both measures would have shown a significant change. It is much more likely that if demand characteristics were present that they were in the form of participants inferring that the images were intended to induce negative affect. Based on

the results, it appears as though participants did not make the connection between mood and cravings, but the possibility is still there.

However, in evaluating the possibility that individuals may have acted in a way that was consistent with what they inferred the hypothesis to be, it would be helpful in future studies to simply ask participants, at the end of their participation, what they believed the hypothesis to be. Asking this question would provide insight into whether participants inferred the correct hypothesis and simply aligned their answers to match that hypothesis instead of answering truthfully. Furthermore, another potential solution to solve this problem would be to give a truthful, but more general description of the hypothesis.

The study conducted by Perkins et al. (2012) did not explicitly ask participants what their urges were to smoke while experiencing negative affect which aided their attempts to disguise the intent of the study. The researchers instead counted the puff frequency and volume. In progressing this line of research, the coordination between campus authorities and researchers to reintegrate this form of observation back into studies may become paramount in gaining an accurate understanding of true vaping behaviors. Measuring and utilizing a metric that is based on the actual behavior of participants in the lab would allow for an increase in the sensitivity of the measure rather than utilizing a self-report of urges. That is, utilizing the Likert scale, in this study, required participants to use self-evaluation after they were no longer viewing the images which could have degraded or altered the report of the urges. Simply allowing participants to vape freely, while experiencing negative affect, could establish a less

obvious assessment of vaping for participants rather than asking them to provide a self-report on urges to vape.

The next point of discussion addresses the type of negative affect that was elicited from the sample of participants. Even though the negative affect induction method led to a significant change in negative affect, urges to vape did not change. In future studies it may be beneficial to address the type of negative affect that is being elicited and pick an induction technique that is consistent with the individual types of negative affect measured in the S-VCQ. Doing so could potentially increase the validity of the S-VCQ due to an increased alignment between the negative affect the S-VCQ measures and the negative affect that is induced during the study.

Lastly, regarding the S-VCQ specifically, the instructions require participants to differentiate between the likelihood and desirability of outcomes which led to some expressed confusion from participants. This confusion opens the door to the possibility that others, who were equally confused with how to make the differentiation, simply did not express their concern and continued with the survey. In future studies, it would be beneficial to add an explanatory protocol to the study prior to individuals taking the S-VCQ as to clear up any confusion that may lead to inaccurate survey responses. Providing this type of clarity universally to all participants might alleviate any misunderstandings and ensure that all participants are experiencing a more aligned procedure with reduced variability.

References

Best, J. A., & Hakstian, A. R. (1978). A situation-specific model for smoking

behavior. *Addictive Behaviors*, *3*(2), 79–92. https://doi-

org.ezproxy.mtsu.edu/10.1016/0306-4603(78)90030-8

Brandon, T. H., & Baker, T. B. (1991). The smoking consequences questionnaire: the

subjective expected utility of smoking in college students. *Psychological*

Assessment: A Journal of Consulting and Clinical Psychology, *3*(3), 484–491.

https://doi-org.ezproxy.mtsu.edu/10.1037/1040-3590.3.3.484

Buckley, T. C., Kamholz, B. W., Mozley, S. L., Gulliver, S. B., Holohan, D. R.,

Helstrom, A. W., … Kassel, J. D. (2005). A psychometric evaluation of the

Smoking Consequences Questionnaire--adult in smokers with psychiatric

conditions. *Nicotine & Tobacco Research*, *7*(5), 739–745. https://doi-

org.ezproxy.mtsu.edu/10.1080/14622200500259788

Carter, B. L., & Tiffany, S. T. (2001). The cue-availability paradigm: The effects of

cigarette availability on cue reactivity in smokers. *Experimental & Clinical*

Psychopharmacology, 9, 183–190.

http://dx.doi.org.ezproxy.mtsu.edu/10.1037/1064-1297.9.2.183

Conklin, C. A., & Perkins, K. A. (2005). Subjective and reinforcing effects of smoking

during negative mood induction. *Journal of Abnormal Psychology*, *114*(1), 153–

164. https://doi-org.ezproxy.mtsu.edu/10.1037/0021-843X.114.1.153

Copeland, A. L., Brandon, T. H., & Quinn, E. P. (1995). The smoking consequences questionnaire-adult: measurement of smoking outcome expectancies of experienced smokers. *Psychological Assessment*, (4), 484. Retrieved from https://ezproxy.mtsu.edu/login?url=http://search.ebscohost.com/login.aspx?direct =true&db=edsgao&AN=edsgcl.17970979&site=eds-live&scope=site

Copeland, A. L., Diefendorff, J. M., Kendzor, D. E., Rash, C. J., Businelle, M. S., Patterson, S. M., & Williamson, D. A. (2007). Measurement of smoking outcome expectancies in children: the smoking consequences questionnaire-child. *Psychology of Addictive Behaviors*, *21*(4), 469–477. https://doi-org.ezproxy.mtsu.edu/10.1037/0893-164X.21.4.469

Cox, L. S., Tiffany, S. T., & Christen, A. G. (2001). Evaluation of the brief questionnaire of smoking urges (QSU-brief) in laboratory and clinical settings. *Nicotine and Tobacco Research*, (1), 7. Retrieved from https://ezproxy.mtsu.edu/login?url=http://search.ebscohost.com/login.aspx?direct =true&db=edsbl&AN=RN093597333&site=eds-live&scope=site

de Souza, M. S., Araujo, J. M. G., & Souza, L. D. de M. (2018). Psychometric Validation of the Short Form of the Smoking Consequences Questionnaire (S-SCQ) for Brazil/Validacao Psicometrica do Short Form of the Smoking Consequences Questionnaire (S-SCQ) a um contexto brasileiro. *Ciencia & Saude Coletiva*, (11), 3947. https://doi-org.ezproxy.mtsu.edu/10.1590/1413-812320182311.09612016

Diener, E., & Emmons, R. A. (1984). The independence of positive and negative affect. *Journal of Personality and Social Psychology. 47,* 1105-1117. doi:10.1037/0022-3514.47.5.1105

Foulds, J., Veldheer, S., Yingst, J., Hrabovsky, S., Wilson, S. J., Nichols, T. T., &
Eissenberg, T. (2015). Development of a questionnaire for assessing dependence
on electronic cigarettes among a large sample of ex-smoking e-cigarette
users. *Nicotine & Tobacco Research*, *17*(2), 186–192. https://doi-
org.ezproxy.mtsu.edu/10.1093/ntr/ntu204

Hall, F. S., Der-Avakian, A., Gould, T. J., Markou, A., Shoaib, M., & Young, J. W.
(2015). Negative affective states and cognitive impairments in nicotine
dependence. *Neuroscience and Biobehavioral Reviews*, *58*, 168–185.
https://doi.org/10.1016/j.neubiorev.2015.06.004

Ikard, F. F., Green, D. E., & Horn, D. (1969). A scale to differentiate between types of
smoking as related to the management of affect. *International Journal of the
Addictions*, *4*(4), 649. Retrieved from
https://ezproxy.mtsu.edu/login?url=http://search.ebscohost.com/login.aspx?direct
=true&db=edb&AN=79254244&site=eds-live&scope=site

Jeffries, S. K., Catley, D., Okuyemi, K. S., Nazir, N., McCarter, K. S., Grobe, J. E., &
Ahluwalia, J. S. (2004). Use of a brief smoking consequences questionnaire for
adults (SCQ-A) in african american smokers. *Psychology of Addictive
Behaviors*, *18*(1), 74–77. https://doi-org.ezproxy.mtsu.edu/10.1037/0893-
164X.18.1.74

Lang, P. J., Ohman, A., & Vaitl, D. (1988). The international affective picture system
[Photographic slides]. Gainesville, FL: The Center for Research in
Psychophysiology, University of Florida.

Miller, S., Pike, J., Stacy, A. W., Xie, B., & Ames, S. L. (2017). Negative affect in at-risk

    youth: Outcome expectancies mediate relations with both regular and electronic

    cigarette use. *Psychology of Addictive Behaviors*, *31*(4), 457–464.

    https://doi.org/10.1037/adb0000272

McKennell, A. C. (1970). Smoking motivation factors. *British Journal of Social &*

    Clinical Psychology, *9*(1), 8–22. https://doi-org.ezproxy.mtsu.edu/10.1111/j.2044-

    8260.1970.tb00632.x

Mirbolouk, M., Charkhchi, P., Kianoush, S., Uddin, S. M. I., Orimoloye, O. A., Jaber, R.,

    … Blaha, M. J. (2018). Prevalence and distribution of e-cigarette use among U.S.

    adults: behavioral risk factor surveillance system, 2016. *Annals of Internal*

    Medicine, *169*(7), 429–438. https://doi.org/10.7326/M17-3440

Morean, M. E., & L'Insalata, A. (2017). The short form vaping consequences

    questionnaire: psychometric properties of a measure of vaping expectancies for

    use with adult e-cigarette users. *Nicotine & Tobacco Research*, *19*(2), 215–

    221. https://doi.org/10.1093/ntr/ntw205

Myers, M. G., MacPherson, L., McCarthy, D. M., & Brown, S. A. (2003). Constructing a

    short form of the Smoking Consequences Questionnaire with adolescents and

    young adults. *Psychological Assessment*, *15*(2), 163–172. https://doi-

    org.ezproxy.mtsu.edu/10.1037/1040-3590.15.2.163

Palmer, A. M., & Brandon, T. H. (2018). How do electronic cigarettes affect cravings to

    smoke or vape? parsing the influences of nicotine and expectancies using the

    balanced-placebo design. *Journal of Consulting & Clinical Psychology*, *86*(5),

    486–491. https://doi-org.ezproxy.mtsu.edu/10.1037/ccp0000303

Perkins, K. A., Giedgowd, G. E., Karelitz, J. L., Conklin, C. A., & Parzynski, C. S.
(2012). Expectancy for negative affect relief due to smoking may not be
predictive under acute mood situations. *Experimental and Clinical
Psychopharmacology*, (2), 161. Retrieved from
https://ezproxy.mtsu.edu/login?url=http://search.ebscohost.com/login.aspx?direct
=true&db=edsbl&AN=RN310787710&site=eds-live&scope=site

Rash, C. J. ., & Copeland, A. L. (2008). The Brief Smoking Consequences
Questionnaire--Adult (BSCQ-A): Development of a short form of the SCQ-
A. *Nicotine & Tobacco Research*, *10*(11), 1633–1643. https://doi-
org.ezproxy.mtsu.edu/10.1080/14622200802409990

Russell, M. A. H., Peto, J., & Patel, U. A. (1974). The classification of smoking by
factorial structure of motives. *Journal of the Royal Statistical Society. Series A
(General)*, *137*(3), 313. https://doi-org.ezproxy.mtsu.edu/10.2307/2344953

Schleicher, H. E., Harris, K. J., Catley, D., Harrar, S. W., & Golbeck, A. L. (2008).
Examination of a brief Smoking Consequences Questionnaire for college
students. *Nicotine & Tobacco Research*, *10*(9), 1503–1509. https://doi-
org.ezproxy.mtsu.edu/10.1080/14622200802323175

Singh, T., Arrazola, R., Corey, C., Husten, C., Neff, L., Homa, D., King, B. Tobacco use
among middle and high school students–United States, 2011–2015. MMWR
Morb Mortal Wkly Rep. 2016; 65:361–367. DOI: 10.15585/mmwr.mm6514a1

Thomas, J. L., Bronars, C. A., Stewart, D. W., Okuyemi, K. S., Befort, C. A., Nazir, N.,
… Ahluwalia, J. S. (2009). Psychometric properties of a brief Smoking
Consequences Questionnaire for Adults (SCQ-A) among African American light
smokers. *Substance Abuse*, *30*(1), 14–25. https://doi-
org.ezproxy.mtsu.edu/10.1080/08897070802606345

Vidrine J.I., Vidrine D.J., Costello T.J., Mazas C., Cofta-Woerpel L., Mejia L.M., …
Wetter. (2009). The smoking consequences questionnaire: factor structure and
predictive validity among Spanish-speaking latino smokers in the United
States. *Nicotine & Tobacco Research*, *11*(11), 1280–1288. https://doi-
org.ezproxy.mtsu.edu/10.1093/ntr/ntp128

Zeidi, I. M., Saffari, M., Chen, H., & Pakpour, A. H. (2014). Translation, reliability and
validity of Iranian version of the Smoking Consequences Questionnaire (SCQ)
among smokers. *Journal of Substance Use*, *19*(5), 382–387. https://doi-
org.ezproxy.mtsu.edu/10.3109/14659891.2013.833654

Table 1

Descriptive Statistics: Vaping History, Nicotine Dependence, and S-VCQ			
Question	**Mean**	**Std. Deviation**	**N**
How many days a week, in the last month, have you typically used an e-cigarette/vaping device (E.g., Juul, vaping apparatus, hookah, blue eCigs, etc.)?	6.3571	1.33631	14
If you use a pod-based e-cigarette/vaping device (E.g., Juul or Sourin), approximately how many Pods have you used in the last week?	1.5000	0.83666	6
If you use a refillable tank-based e-cigarette/vaping device, how many milliliters (ml) did you go through in the last 2 weeks?	57.2222	43.23707	9
If you use a refillable tank-based e-cigarette/vaping device, how many milliliters (ml) did you go through in the last month?	140.0000	131.25765	8
If you use a refillable tank-based e-cigarette/vaping device, what is the wattage that you use on your device?	66.0000	24.84955	5
If you use a refillable tank-based e-cigarette/vaping device, how many milligrams (mg) of nicotine do you typically use in your e-liquid?	10.9900	16.10593	10
Penn State Nicotine Dependence Index	10.0714	4.34058	14
S-VCQ: Positive Reinforcement	20.3571	16.92157	14
S-VCQ: Appetite/Weight Control	-9.6143	19.10835	14
S-VCQ: Negative Consequences	8.9048	17.66542	14
S-VCQ: Negative Reinforcement/Negative Affect Reduction	9.7714	21.28110	14

Table 2

Mood Ratings: Means and Standard Deviations			
	Mean	**Std. Deviation**	**N**
Mood_T_0	0.9964	1.11777	14
Mood_T_1	1.1714	1.21998	14
Mood_T_2	1.3286	1.63162	14
Mood_T_3	1.6143	1.79823	14

Table 3

Mood Ratings: Pairwise Comparisons						
Measure: Mood Rating						
(I) Time		Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	0	0.175	0.172	1.000	-0.359	0.709
2	0	0.332	0.226	0.988	-0.369	1.033
	1	0.157	0.131	1.000	-0.251	0.565
3	0	0.618	0.260	0.200	-0.189	1.425
	1	0.443	0.168	0.123	-0.079	0.965
	2	.286[*]	0.083	0.026	0.027	0.544

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjusted for multiple comparisons via the Bonferroni procedure.

Table 4

Craving Scores: Means and Standard Deviations			
	Mean	**Std. Deviation**	**N**
Craving_T_0	-0.7379	1.76461	14
Craving_T_1	-0.9050	1.57714	14
Craving_T_2	-0.6907	1.66602	14
Craving_T_3	-0.5943	1.69499	14

Table 5

Craving and Mood Scores: Means and Standard Deviations			
	Mean	**Std. Deviation**	**N**
Average Craving (Mean of (T_1-T_3)) $-T_0$	0.0093	0.96543	14
Average Mood (Mean of (T_1-T_3)) $-T_0$	0.3757	0.78071	14

Table 6

Pearson Correlations Between Average Craving and Mood Scores			
		Average Craving (Mean of (T_1-T_3)) $-T_0$	Average Mood (Mean of (T_1-T_3)) $-T_0$
Average Craving (Mean of (T_1-T_3)) $-T_0$	Pearson Correlation	1	-0.058
	Sig. (1-tailed)	-	0.422
	N	14	14
Average Mood (Mean of (T_1-T_3)) $-T_0$	Pearson Correlation	-0.058	1
	Sig. (1-tailed)	0.422	
	N	14	14

Table 7

Negative Reinforcement/Negative Affect Reduction and Craving Scores: Means and Standard Deviations			
	Mean	**Std. Deviation**	**N**
Negative Reinforcement/Negative Affect Reduction Subscale	9.7714	21.28110	14
Cravings (T_1) Minus (T_0)	-0.1671	1.09123	14
Cravings (T_2) Minus (T_0)	0.0471	0.94136	14
Cravings (T_3) Minus (T_0)	0.1429	1.06068	14
Average Craving (T_1-T_3) Minus T_0	0.0093	0.96543	14

Table 8

Pearson Correlations Between Negative Reinforcement/Negative Affect Reduction Scores and Craving Scores						
		Negative Reinforcement/Negative Affect Reduction Subscale	Cravings (T_1) Minus (T_0)	Cravings (T_2) Minus (T_0)	Cravings (T_3) Minus (T_0)	Average Craving (Mean of $(T_1$-$T_3))$ -T_0)
Negative Reinforcement/Negative Affect Reduction Subscale	Pearson Correlation	1	0.162	0.095	0.384	0.232
	Sig. (1-tailed)		0.290	0.373	0.088	0.212
	N		14	14	14	14
Cravings (T_1) Minus (T_0)	Pearson Correlation		1	.856[**]	.761[**]	.934[**]
	Sig. (1-tailed)			0.000	0.001	0.000
	N			14	14	14
Cravings (T_2) Minus (T_0)	Pearson Correlation			1	.833[**]	.953[**]
	Sig. (1-tailed)				0.000	0.000
	N				14	14
Cravings (T_3) Minus (T_0)	Pearson Correlation				1	.923[**]
	Sig. (1-tailed)					0.000
	N					14

** Correlation is significant at the 0.01 level (1-tailed).
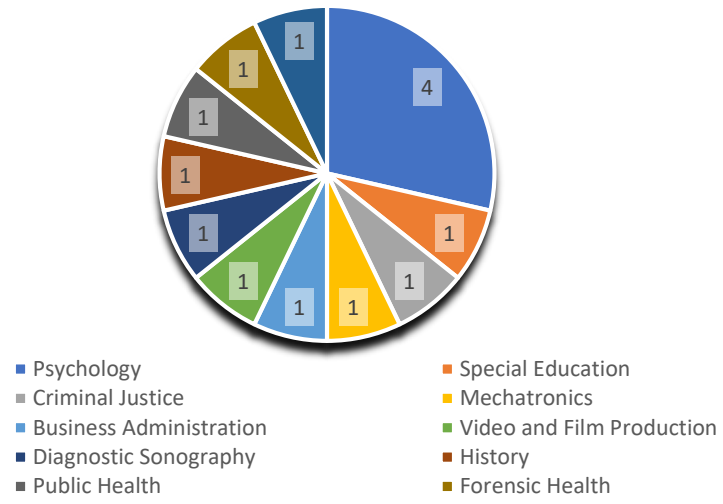
Legend:
- Psychology
- Special Education
- Criminal Justice
- Mechatronics
- Business Administration
- Video and Film Production
- Diagnostic Sonography
- History
- Public Health
- Forensic Health

Figure 1: College Major

Appendix A

IRB INSTITUTIONAL REVIEW BOARD
Office of Research Compliance, 010A Sam Ingram Building,
2269 Middle Tennessee Blvd Murfreesboro, TN 37129
IRBN001 Version 1.4   Revision Date 06.11.2019

IRBN001 - EXPEDITED PROTOCOL APPROVAL NOTICE

Monday, January 13, 2020
Principal Investigator Landon Johnson (Student)
Faculty Advisor James Tate
Co-Investigators NONE
Investigator Email(s) laj4d@mtmail.mtsu.edu; james.tate@mtsu.edu
Department Psychology
Protocol Title: A validity test of the short form vaping consequences questionnaire
Protocol ID 20-2029

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional
Review Board (IRB) through the EXPEDITED mechanism under 45 CFR 46.110 and 21
CFR 56.110 within the category (7) Research on individual or group characteristics or
behavior. A summary of the IRB action and other particulars in regard to this protocol
application is tabulated below:

IRB Action APPROVED for ONE YEAR Date of Expiration 1/31/2021 Date of
Approval 1/13/20 Sample Size 50 (FIFTY) Participant Pool Target Population 1: Primary
Classification: General Adults (18 or older) Specific Classification: Healthy individuals
in the SONA system who are CURRENT vapers and satisfy TN smoking restrictions
Target Population 2: Primary Classification: NONE Specific Classification: NONE
Exceptions 1. Participant contact information is permitted to coordinate this research. 2.
Retention of participant information to meet SONA requirements Restrictions 1.
Mandatory SIGNED adult informed consent.   2. Direct interaction only; NOT approved
for online data collection. 3. Not approved to collect identifiable information, such as,
audio/video data, photographs, handwriting samples, financial information, personal
address, driving records, social security number, and etc. 4. The participant must be a
current vaper
The approval Mandatory final report (refer last page).
Approved Templates MTSU templates: signature informed consent and SONA script
Non-MTSU template: Recruitment email script Comments

Institutional Review Board Office of Compliance   Middle Tennessee State University
IRBN001 – Expedited Protocol Approval Notice
Post-approval Actions

The investigator(s) indicated in this notification should read and abide by all of the post-approval conditions (https://www.mtsu.edu/irb/FAQ/PostApprovalResponsibilities.php) imposed with this approval. Any unanticipated harms to participants, adverse events or compliance breach must be reported to the Office of Compliance by calling 615-494-8918 within 48 hours of the incident. All amendments to this protocol, including adding/removing researchers, must be approved by the IRB before they can be implemented.

Continuing Review   (The PI has requested early termination) Although this protocol can be continued for up to THREE years, The PI has opted to end the study by 1/31/2021 The PI must close-out this protocol by submitting a final report before 1/31/2021   Failure to close-out may result in penalties including cancellation of the data collected using this protocol.

Post-approval Protocol Amendments: Only two procedural amendment requests will be entertained per year. In addition, the researchers can request amendments during continuing review. This amendment restriction does not apply to minor changes such as language usage and addition/removal of research personnel. .

Date Amendment(s): NONE
IRB Comments NONE
Other Post-approval Actions: NONE
Date IRB Action(s): NONE
IRB Comments NONE

 Mandatory Data Storage Requirement: All research-related records (signed consent forms, investigator training and etc.) must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data must be stored for at least three (3) years after the study is closed. TN State data retention requirement may apply. The PI must consult with MTSU Office of Data Management. Subsequently, the data may be destroyed in a manner that maintains confidentiality and anonymity of the research subjects.

The MTSU IRB reserves the right to modify/update the approval criteria or change/cancel the terms listed in this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board Middle Tennessee State University

Demographic and E-Cigarette History Survey

Demographics

Age _____

Sex (Circle One):   Male   Female

Ethnicity (Check Any Applicable): □ Asian □ Black/African American □ White/

Caucasian   □ Hispanic/ Latino □ Native American □ Pacific Islander □ Other:

_____

Student Status (Circle One): □ Freshman □ Sophomore □ Junior □ Senior □ Other

College Major: _____

E-cigarette/Vaping History

1) Have you used an e-cigarette/vaping device (I.e., Juul, vaping apparatus, hookah, blue

eCigs, etc.) in the last 30 days? (Select One)

Yes   No

2) Have you used a tobacco-based product in the last 30 days (I.e., cigarette, chewing

tobacco, cigar, etc.)? (Select One)

Yes   No

3) Which, if any, of the following e-cigarette/vaping devices have you used in the last 2

weeks? (Check all that apply)

____ First Generation E-Cigarette (I.e., look-a-like e-cigarettes, original Blu eCigs etc.)

____ Second Generation E-Cigarette (I.e., Rechargeable Vape Pen)

____ Third Generation E-Cigarette (I.e., Large Mods)

____ Fourth Generation E-cigarette (I.e., JUUL, Suorin Drop, MyBlu, etc.)

4) How many days a week, in the last month, have you typically used an e-cigarette/vaping device (E.g., Juul, vaping apparatus, hookah, blue eCigs, etc.)? (Circle One)

0   1   2   3   4   5   6   7

5) If you use a pod-based e-cigarette/vaping device (E.g., Juul or Sourin), approximately how many Pods have you used in the last week?

_____ Pods

6) If you use a refillable tank-based e-cigarette/vaping device, how many milliliters (ml) did you go through in the last 2 weeks?

_____ ml

7) If you use a refillable tank-based e-cigarette/vaping device, how many milliliters (ml) did you go through in the last month?

_____ ml

8) If you use a refillable tank-based e-cigarette/vaping device, what is the wattage that you use on your device? (If not applicable, mark N/A)

_____ Watts   _____ N/A

7) If you use a refillable tank-based e-cigarette/vaping device, how many milligrams (mg) of nicotine do you typically use in your e-liquid?

_____ mg

Appendix C

Short Survey for Vaping Consequences Questionnaire (S-VCQ)

Statement	Likelihood Rating (Circle One)									
	Completely Unlikely									Completely Likely
1. E-cigarettes taste good.	0	1	2	3	4	5	6	7	8	9
2. Vaping controls my appetite.	0	1	2	3	4	5	6	7	8	9
3. E-cigarettes help me deal with anxiety or worry.	0	1	2	3	4	5	6	7	8	9
4. I enjoy the taste sensations while vaping.	0	1	2	3	4	5	6	7	8	9
5. Vaping helps me deal with depression.	0	1	2	3	4	5	6	7	8	9
6. E-cigarettes keep me from overeating.	0	1	2	3	4	5	6	7	8	9
7. E-cigarettes help me deal with anger.	0	1	2	3	4	5	6	7	8	9
8. When I vape the taste is pleasant.	0	1	2	3	4	5	6	7	8	9
9. I will enjoy the flavor of an e-cigarette.	0	1	2	3	4	5	6	7	8	9
10. I will enjoy feeling an e-cigarette on my tongue and lips.	0	1	2	3	4	5	6	7	8	9

11. By vaping I risk heart disease and lung cancer.	0	1	2	3	4	5	6	7	8	9
12. E-cigarettes help me reduce or handle tension.	0	1	2	3	4	5	6	7	8	9
13. Vaping helps me control my weight.	0	1	2	3	4	5	6	7	8	9
14. When I'm upset with someone, an E-cigarette helps me cope.	0	1	2	3	4	5	6	7	8	9
15. The more I vape, the more I risk my health.	0	1	2	3	4	5	6	7	8	9
16. E-cigarettes keep me from eating more than I should.	0	1	2	3	4	5	6	7	8	9
17. Vaping keeps my weight down.	0	1	2	3	4	5	6	7	8	9
18. Vaping is hazardous to my health.	0	1	2	3	4	5	6	7	8	9
19. Vaping calms me down when I feel nervous.	0	1	2	3	4	5	6	7	8	9
20. When I'm angry an e-cigarette can calm me down.	0	1	2	3	4	5	6	7	8	9
21. Vaping is taking years off my life.	0	1	2	3	4	5	6	7	8	9

Subscales of Expectancy are broken into colors: Positive Reinforcement (Blue), Negative Consequences (Red), Negative Reinforcement (Green), and Appetite/Weight control (Purple).

Each item is scored by a cross product between likelihood and desirability.

Statement	Desirability Rating (Circle One)										
	Completely Undesirable										Completely Desirable
1. E-cigarettes taste good.	-5	-4	-3	-2	-1	0	1	2	3	4	5
2. Vaping controls my appetite.	-5	-4	-3	-2	-1	0	1	2	3	4	5
3. E-cigarettes help me deal with anxiety or worry.	-5	-4	-3	-2	-1	0	1	2	3	4	5
4. I enjoy the taste sensations while vaping.	-5	-4	-3	-2	-1	0	1	2	3	4	5
5. Smoking/Vaping helps me deal with depression.	-5	-4	-3	-2	-1	0	1	2	3	4	5
6. E-cigarettes keep me from overeating.	-5	-4	-3	-2	-1	0	1	2	3	4	5
7. E-cigarettes help me deal with anger.	-5	-4	-3	-2	-1	0	1	2	3	4	5
8. When I smoke/vape the taste is pleasant.	-5	-4	-3	-2	-1	0	1	2	3	4	5
9. I will enjoy the flavor of an e-cigarette.	-5	-4	-3	-2	-1	0	1	2	3	4	5
10. I will enjoy feeling an e-cigarette on my tongue and lips.	-5	-4	-3	-2	-1	0	1	2	3	4	5
11. By smoking/vaping I risk heart disease and lung cancer.	-5	-4	-3	-2	-1	0	1	2	3	4	5

12. E-cigarettes help me reduce or handle tension.	-5	-4	-3	-2	-1	0	1	2	3	4	5
13. Vaping helps me control my weight.	-5	-4	-3	-2	-1	0	1	2	3	4	5
14. When I'm upset with someone, an E-cigarette helps me cope.	-5	-4	-3	-2	-1	0	1	2	3	4	5
15. The more I smoke/vape, the more I risk my health.	-5	-4	-3	-2	-1	0	1	2	3	4	5
16. E-cigarettes keep me from eating more than I should.	-5	-4	-3	-2	-1	0	1	2	3	4	5
17. Vaping keeps my weight down.	-5	-4	-3	-2	-1	0	1	2	3	4	5
18. Vaping is hazardous to my health.	-5	-4	-3	-2	-1	0	1	2	3	4	5
19. Smoking/Vaping calms me down when I feel nervous.	-5	-4	-3	-2	-1	0	1	2	3	4	5
20. When I'm angry an e-cigarette can calm me down.	-5	-4	-3	-2	-1	0	1	2	3	4	5
21. Smoking/Vaping is taking years off my life.	-5	-4	-3	-2	-1	0	1	2	3	4	5

Subscales of Expectancy are broken into colors: Positive Reinforcement (Blue), Negative Consequences (Red), Negative Reinforcement (Green), and Appetite/Weight control (Purple).

Each item is scored by a cross product between likelihood and desirability.

Appendix D

Penn State Electronic Cigarette Dependence Index

1. How many times per day do you usually use your electronic cigarette? (Assume

that one "time" consists of around 15 puffs or lasts around 10 minutes)

_____ Times per Day

(Scoring: 0–4 times/day = 0, 5–9 = 1, 10–14 = 2, 15–19 = 3, 20–29 = 4, 30+ = 5)

---

2. On days that you can use your electronic cigarette freely, how soon after you wake

up do you first use your electronic cigarette? (Time in Minutes)

_____ Minutes

(Scoring: 0–5 mins = 5, 6–15 = 4, 16–30 = 3, 31–60 = 2, 61–120 = 1, 121+ = 0)

---

3. Do you sometimes awaken at night to use your electronic cigarette? (**Circle One)**

Yes   No

(Scoring: Yes = 1, No = 0)

---

4. If yes, how many nights per week do you typically awaken to use your electronic

cigarette? (Circle One)

0   1   2   3   4   5   6   7

(Scoring: 0–1 night = 0, 2–3 nights = 1, 4+ nights = 2)

5. Do you use an electronic cigarette now because it is really hard to quit? (**Circle One)**

Yes   No

(Scoring: Yes = 1, No = 0)

---

6. Do you ever have strong cravings to use an electronic cigarette? (**Circle One)**

Yes   No

(Scoring: Yes = 1, No = 0)

---

7. Over the past week, how strong have the urges to use an electronic cigarette been?
(**Circle One)**

None   Slight   Moderate   Strong   Very Strong   Extremely S

(Scoring: None/Slight = 0, Moderate/Strong= 1, Very Strong/Extremely Strong = 2)

---

8. Is it hard to keep from using an electronic cigarette in places where you are not
supposed to? (**Circle One)**

Yes   No

(Scoring: Yes = 1, No = 0)

When you haven't used an electronic cigarette for a while or when you tried to stop

using…

9. Did you feel more irritable because you couldn't use an electronic cigarette?

(**Circle One)**

Yes   No

(Scoring: Yes = 1, No = 0)

10. Did you feel nervous, restless, or anxious because you couldn't use an electronic

cigarette? (**Circle One)**

Yes   No

(Scoring: Yes = 1, No = 0)

Total scoring: 0–3= not dependent, 4–8 low dependence, 9–12 medium dependence, 13+

= high dependence.

Appendix E

Mood Form

1) At this time how depressed or blue do you feel? Mark the box that most closely

resembles your mood.

0   1   2   3   4   5   6   7   8   9   10

2) At this time how unhappy do you feel? Mark the box that most closely resembles your

mood.

0   1   2   3   4   5   6   7   8   9   10

3) At this time how frustrated do you feel? Mark the box that most closely resembles your mood.

0	1	2	3	4	5	6	7	8	9	10

4) At this time how worried or anxious do you feel? Mark the box that most closely resembles your mood.

0	1	2	3	4	5	6	7	8	9	10

5) At this time how angry or hostile do you feel? Mark the box that most closely resembles your mood.

0	1	2	3	4	5	6	7	8	9	10

Appendix F

Questionnaire of Smoking Urges - Brief

Statements	Circle the one that most closely defines you at this present time.						
	Completely Disagree						Completely Agree
I have a desire to use an e-cigarette/vape right now.	0	1	2	3	4	5	6
All I want right now is to use my e-cigarette/vape.	0	1	2	3	4	5	6
I have an urge for an e-cigarette.	0	1	2	3	4	5	6