

Personality Traits Associated with Impulsive Behaviour as a Predictor of the Level of E-Cigarette Use in Adolescents

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Abstract

This study aimed to identify personality traits related to impulsive behaviour and their role in predicting the extent of e-cigarette use among adolescents. The study included 482

adolescents of both genders. To accomplish the study's objectives, a personality trait scale linked to impulsive behaviour is employed. The arithmetic averages of the impulsive personality scale came at a high level, where cognitive impulsivity came with an arithmetic average (3.71), and a high level, followed by behavioral impulsivity with an arithmetic average (3.37), and in last place impatience/insomnia with an arithmetic average (3.33) and an average level. The findings revealed significant differences in educational level between the postgraduate category and both the secondary and university categories. These differences favoured the secondary and university categories. However, no significant differences were observed in the remaining variables, except for the cognitive rush dimension, where differences were found based on age. Specifically, the 18-20 age category showed a favourable outcome. A significant relationship was observed between personality traits related to impulsive behaviour and the use of e-cigarettes. This relationship accounted for 13.6% of the variance in e-cigarette use. The significance level for this effect was set at $\alpha = .05$. Additionally, the use of e-cigarettes was found to have a significant impact on behavioural impulsivity ($b = 0.208$) and impatience/insomnia ($b = 0.236$).

Keywords, Personality Traits, Impulsive Behavior, E-Cigarette Use, Adolescents

1. Introduction

Cigarette smoking is a significant contributor to preventable illness and death, causing over 480,000 fatalities annually. Additionally, the habit typically starts during adolescence and incurs substantial healthcare expenses. Similarly, a study found that 10% of eighth-grade students in the United States have experimented with smoking cigarettes. Meanwhile, it is important to understand the factors that predict early use and dependence on cigarettes, and to know their impact as a “positive or negative feeling about something or motivator”, perceived risks as “cognitive assessments of the potential threat or harm” associated with smoking, as a predictor of cigarette use, and tobacco use disorder (TUD) symptoms in adolescence (Upton et al., 2023). The prevalence of e-cigarette use among young individuals has experienced significant growth, resulting in an increased likelihood of subsequent tobacco consumption, as indicated by Khurana, Loan, and Romer (2022).

There is a disparity in e-cigarette usage between males and females, with males reporting higher usage rates. However, there is limited knowledge regarding the variations in risk factors for e-cigarette use based on gender (Afolabi & Rao, 2023). The

adoption of new technologies, commonly referred to as being "tech-savvy," is more prevalent among females compared to males. Females' greater usage of social media platforms (Zorrilla & Koob, 2019) contributes to their higher adoption of new technologies. The prevalence of alcohol use and e-cigarette use among adolescents continues to pose a persistent issue (Rodríguez-Bolaños et al., 2020). Alcohol consumption exhibits a direct correlation with age, wherein the prevalence of abuse and dependence symptoms sharply increases between the ages of 16 and 18. During adolescence, alcohol use is commonly observed as a typical behaviour and aligns with a broader pattern of heightened risk-taking during the developmental phase. Additionally, the individual aspect of impulsivity holds significant relevance in the context of alcohol abuse, particularly among individuals with alcoholism (Erhabor et al., 2023). Moreover, this condition is distinguished by its early manifestation, unsolicited investigation, and a heightened occurrence of aggressive and antisocial conduct. The association between impulsivity and alcohol abuse is most accurately perceived as a reciprocal phenomenon, wherein elevated levels of this trait influence the probability of escalated consumption.

According to the findings of Bos et al. (2019), impulsive smoking behaviour has negative implications for individuals' health. In addition Liu et al. (2019), emphasised that adolescents exhibiting impulsive smoking behaviour are not effectively taking measures to enhance their health standards. The health status of an individual plays a crucial role in enhancing their daily productivity. Smoking poses a significant obstacle in this regard. In a study conducted by Upton et al. (2023), it was found that impulsive behaviour plays a crucial role in the context of smoking cessation. The researchers emphasised the importance of actively avoiding smoking in order to successfully quit the habit. When adolescents engage in smoking, it poses challenges for them to enhance their personalities in a corresponding manner. Smoking has been associated with a range of adverse health effects, particularly impacting lung health. The detrimental consequences of smoking on overall well-being are well documented, with the lungs being particularly susceptible to the harmful effects of this behaviour González-Roz et al. (2020). highlighted the importance of refraining from impulsive smoking due to its potential to result in significant health complications.

These studies have examined various facets of impulsive electronic cigarette use. However, the existing literature has gaps that require addressing. This study aims to identify the personality traits linked to impulsive behaviour and their role in predicting the extent of e-cigarette use among adolescents. The study aims to support its findings with empirical evidence. The study observed a statistically significant effect at a significant level of $\alpha = .05$ for personality traits related to impulsive behaviour in predicting the extent of e-cigarette usage. Specifically, the study found that personality traits accounted for 13.6% of the explained variance in e-cigarette use. The remaining sections of the research comprise the following components: a literature review, a methodology section, a presentation of the findings derived from the collected data, a discussion and conclusion section based on these findings, and an exploration of the theoretical and practical implications. In subsequent studies, potential future directions can be pursued as outlined by the study.

2. Review of Literature

Impulsivity refers to the inclination to engage in spontaneous behaviour without thoughtful consideration of the potential outcomes, resulting in impulsive actions are usually “poorly designed, expressed prematurely, involve unjustified risks, or are inappropriate for the situation that often leads to undesirable consequences”. In addition [Stautz and Cooper \(2013\)](#), found that engaging in impulsive behaviour jeopardises long-term goals and success strategies. This includes acting without sufficient deliberation and prioritising short-term gains over long-term gains ([DeYoung & Rueter, 2010](#)). Impulsivity is a fundamental characteristic of personality and is closely associated with several disorders, such as substance use disorders, bipolar disorder, antisocial personality disorder, and borderline personality disorder. Furthermore, cases of acquired brain injury and neurological diseases have documented abnormal patterns of impulsivity. The neurobiological findings indicate that certain brain regions are associated with impulsive behaviour, while various brain networks may contribute to different forms of impulsivity ([VandenBos, 2007](#)). The capacity to regulate impulses, particularly the inclination to act on them, plays a significant role in personality development and socialisation. Deferred gratification,

also referred to as impulse control, exemplifies this ability, particularly in relation to desires and wants. Delayed gratification occurs when individuals refrain from acting on their initial impulses (Terracciano et al., 2011).

Similarly Mittal et al. (2022), found that 51.8% of males, with an average age of 20 years, actively used e-cigarettes. The study spanned 8 waves of evaluation over a period of 21 months, from 2017 to 2020. The study's findings revealed a decline in vaping frequency by 0.92 over time, as well as a correlation between e-cigarette use and a lack of intentionality (IRR = 1.06) and sensation search (IRR = 1.09). In addition, there was a negative relationship between vaping frequency and negative urgency (IRR = 0.95). Positive urgency and a lack of perseverance did not show any significant association with repeated vaping smoking. In a recent study by Rodríguez-Bolaños et al. (2020), it was found that the exclusive use of e-cigarettes is currently 6.4% among males and 5.5% among females; current exclusive smoking was similar among males (3.6%) and females (3.5%); and dual use was 2.4% females and 1.8% males. Having friends who smoked cigarettes at the baseline was found to be a significant predictor of current exclusive e-cigarette use (ARR = 1.44; $P < 0.05$). The findings revealed shared and distinct risk factors for both genders, implying that interventions should account for gender-specific disparities.

Several studies have examined the association between smoking impulsivity and personality traits (Brown & Faulkner, 2023). Teenagers engage in smoking, which negatively impacts their health. Parents are responsible for educating teenagers about the detrimental health effects of smoking and discouraging them from engaging in this behaviour. The availability of cigarettes has increased over time as a result of technological advancements (Masiero et al., 2019). E-cigarettes are readily accessible to children, posing a threat to their overall well-being. There is a connection between human personality and smoking behaviour. Certain individuals may exhibit reluctance to engage in smoking due to concerns regarding potential negative impacts on their health. However, some individuals have developed a smoking habit during their teenage years.

The rising trend of nicotine consumption among students is contributing to an increase in smoking rates. Nicotine consumption through smoking offers

psychological solace to students, which is influenced by their state of depression (Watanapongvanich et al., 2021). Therefore, it is crucial to prevent depression to reduce the likelihood of engaging in smoking behaviour. The human personality and smoking consumption are influenced by gender (Hammond et al., 2021). Women exhibit lower levels of engagement in smoking when compared to men. Smoking has become a prevalent cultural phenomenon, with a significant number of students actively engaging in smoking behaviour.

In addition, the use of electronic smoking devices poses significant health risks. Exposure to this substance has the potential to adversely impact the respiratory system, specifically the lungs. The smokers' attitude also varies. Impulsive smoking is a behaviour commonly observed among individuals who are influenced by their peers to engage in smoking (Meijer et al., 2020). The availability of e-vaping products is a significant contributing factor to the increasing prevalence of smoking behaviour among individuals. A significant number of smokers exhibit strong motivation to enhance their overall health and successfully quit smoking (Harvanko et al., 2019). The adoption of a responsible mindset by smokers can serve as a precautionary measure to prevent excessive smoking.

However, contemporary generations exhibit a greater inclination towards electronic smoking. The advancement of technology has presented individuals with the chance to engage in digital vaping (Syan et al., 2021). This aspect is of utmost importance since nicotine is also ingested through its consumption. There exist various types of medical innovations that exert influence on individuals' smoking behaviour. Implementing a strategy of reducing nicotine flavour consumption may be considered an appropriate approach to enhancing health outcomes, particularly among highly motivated teenage smokers (J. J. P. Mathijssen et al., 2021). Reducing the amount of medical consumption can be an effective strategy for mitigating the negative effects of smoking.

3. Methodology

The current study sample consisted of 482 participants who were randomly selected from university students and secondary school students in the city of Riyadh.

In addition, the data collection process utilises a simple random sampling method. The participants were requested to complete the survey using the Google Form questionnaire. Based on the variables analysed in the demographic study, the age range of the participants was between 17 and 22 years, with an arithmetic average of 1.92. The level of education varied between secondary, university, and postgraduate studies, with an arithmetic average of 1.99. The participants' place of residence was categorised as north-centre, southwest of Riyadh, or a village, with an arithmetic average of 1.76. Lastly, the economic income ranged from 5,000 to over 10,000 thousand riyals, with an average of 2.26.

In order to assess the variables and obtain the findings of this study, the researchers utilised the impulsive personality scale developed by [Kapitány-Fövényi et al. \(2020\)](#). The scale evenly distributes a total of 21 items across three distinct dimensions. These dimensions are cognitive impulse, behavioural impulsivity, and impatience/insomnia. The data is collected on a four-point scale: (1) rare/never, (2) sometimes, (3) often, and (4) always/almost always. The three primary impulsive factors are traditionally identified as attention impulsivity, motor impulsivity, and non-planning impulsivity. Attention impulsivity refers to difficulties in attention and cognitive stability, while motor impulsivity involves excessive motor activity and a lack of perseverance. Non-planning impulsivity is characterised by poor self-control and cognitive complexity.

In this study, a 22-item e-cigarette dependence scale was utilised. Studies conducted by [Edelen, Huang, and Stucky \(2016\)](#) and [Morean et al. \(2018\)](#) have shown a significant level of stability. The revised scale has retained the original instructions, but with the term "smoke" replaced by "e-cigarettes". The present study investigated the dimensions of nicotine dependence, cessation attempts, and usage patterns. The analysis of the relationship between these dimensions (Figure 1) utilised Pearson's correlation coefficient. The correlation coefficients exhibited a range of 0.78 to 0.97, signifying a robust positive association. The study tools exhibited strong stability, as evidenced by Cronbach alpha and McDonald's stability coefficients of 0.86 and 0.96, respectively. These coefficients are deemed suitable for the purposes of this study.

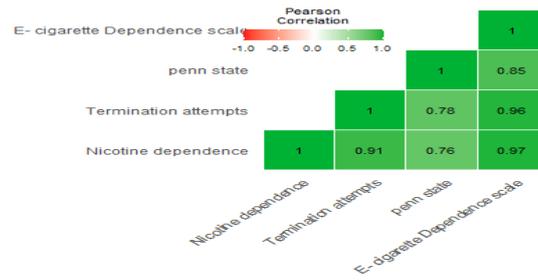


Figure 1. Pearson's correlation coefficient between the dimensions of the e-cigarette uses scale

4. Results

The arithmetic means and standard deviation of the study sample estimates were tested. The arithmetic averages of the impulsive personality scale were found to be high. Cognitive impulsivity had the highest average (3.71), indicating a large level of impulsivity. This was followed by behavioural impulsivity with an average of 3.37, and impatience/insomnia with an average of 3.33, indicating a moderate level of impulsivity. The mean score was 3.47, and the findings are displayed in Table 1 and Figure 2.

Table 1. Arithmetic Mean and Standard Deviations of the Estimates of the Study Sample

| M | Rank | Paragraph | Arithmetic mean | Deviation Normative | Level |
|---|------|-----------------------------|-----------------|---------------------|--------|
| 1 | 1 | Cognitive rush | 3.71 | .70 | High |
| 2 | 2 | Behavioral impulsivity | 3.37 | .74 | Medium |
| 3 | 3 | Impatience/insomnia | 3.33 | .70 | Medium |
| | | Impulsive personality scale | 3.47 | .55 | High |

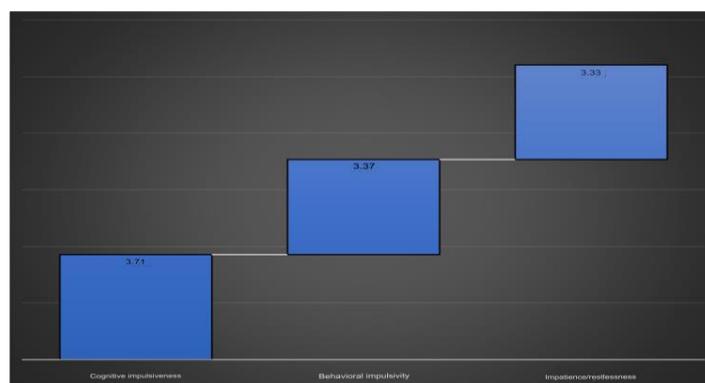


Figure 2. The arithmetic averages of the impulsive personality scale

The arithmetic means of the dimensions of the impulsive personality scale were also computed. The arithmetic averages of the domain paragraphs varied from 3.35 to

4.30. Paragraph 1, which mentioned careful task planning, had the highest average of 4.30. On the other hand, paragraph 5, which discussed regular saving and work, had the lowest average of 3.35. The overall average for all the paragraphs was 3.71. Table 2 presents the results.

Table 2. Arithmetic Averages and Standard Deviations of the Estimates of the Study Sample Members on the Cognitive Impulse

| M | Rank | Paragraph | Arithmetic mean | Deviation Normative | Level |
|---|------|--|-----------------|---------------------|--------|
| 1 | 1 | I plan tasks carefully. | 4.30 | .86 | High |
| 3 | 2 | I feel like I'm in control of myself. | 3.86 | 1.27 | High |
| 7 | 3 | I always plan to maintain job security. | 3.81 | 1.31 | High |
| 9 | 4 | I always think about the future. | 3.81 | 1.35 | High |
| 6 | 5 | I feel like I'm thinking things around meticulously. | 3.72 | 1.30 | High |
| 4 | 6 | I feel like I'm focusing easily. | 3.59 | 1.35 | High |
| 2 | 7 | I plan trips ahead of time. | 3.50 | 1.40 | High |
| 8 | 8 | I consider myself a careful thinker. | 3.44 | 1.38 | High |
| 5 | 9 | I save and save on a regular basis. | 3.35 | 1.42 | medium |
| | | Cognitive rush | 3.71 | .70 | High |

The arithmetic averages of the domain paragraphs varied from 3.15 to 3.69. Paragraph 3, which stated "My actions are usually motivated by a certain motive," had the highest average of 3.69. On the other hand, paragraph 2, which stated "I repeat phrases without thinking about them," had the lowest average of 3.15. The overall average for all paragraphs was 3.37. The findings are presented in Table 3.

Table 3. Arithmetic Averages and Standard Deviations of Study Sample Members' Estimates on Behavioral Impulsivity

| M | Rank | Paragraph | Arithmetic mean | Deviation Normative | Level |
|---|------|---|-----------------|---------------------|--------|
| 3 | 1 | My actions are usually motivated by a certain motive. | 3.69 | 1.27 | High |
| 4 | 2 | I get bored easily when solving problems that need to be thought about. | 3.44 | 1.37 | High |
| 5 | 3 | I act on the motivation of the moment. | 3.37 | 1.33 | medium |
| 1 | 4 | I practice behavior without thinking. | 3.18 | 1.39 | medium |
| 2 | 5 | I repeat phrases without thinking about them. | 3.15 | 1.37 | medium |
| | | Behavioral impulsivity | 3.37 | .74 | medium |

The arithmetic averages of the paragraphs in the field ranged from 2.52 to 3.71.

Paragraph 3, which stated "I tend to shop out of need," had the highest average of 3.71. On the other hand, paragraph 2, which stated "I constantly tend to change my place of residence," had the lowest average of 2.52. The overall average for all the paragraphs was 3.33. The findings are presented in Table 4.

Table 4. Arithmetic Averages and Standard Deviations of Study Sample Subjects' Estimates on Impatience/Insomnia

| M | Rank | Paragraph | Arithmetic mean | Deviation Normative | Level |
|---|------|---|-----------------|---------------------|--------|
| 3 | 1 | I tend to shop out of need. | 3.71 | 1.30 | big |
| 6 | 2 | I have strange thoughts when thinking about a specific topic. | 3.59 | 1.35 | Big |
| 5 | 3 | I spend more money than my sources of income. | 3.56 | 1.38 | Big |
| 7 | 4 | I get troubled by the meetings, situations, and roles I play. | 3.37 | 1.28 | Medium |
| 1 | 5 | "I get nervous and confused" while performing certain roles or tasks. | 3.31 | 1.35 | Medium |
| 4 | 6 | . I tend to constantly change my hobbies and sources of pleasure. | 3.28 | 1.42 | Medium |
| 2 | 7 | I tend to constantly change my place of residence. | 2.52 | 1.47 | Medium |
| | | Impatience/insomnia | 3.33 | .70 | Medium |

Table 5. Analysis of Quadruple Variance Without Interaction of Arithmetic Averages of the Estimates of the Study Sample Members on Personality Traits Associated with Impulsive Behavior according to Demographic Variables

| Variable | Dimensions | sum squares | Degrees of freedom | Average squares | P value | Statistical significance |
|--------------------|-----------------------------|-------------|--------------------|-----------------|---------------|--------------------------|
| Lifetime | Cognitive rush | 3.220 | 2 | 1.610 | 4.021 | .019 |
| | Behavioral impulsivity | .714 | 2 | .357 | .683 | .506 |
| | Impatience/insomnia | 1.643 | 2 | .822 | 1.788 | .169 |
| | Impulsive personality scale | 1.609 | 2 | .805 | 3.053 | .050 |
| Education level | Cognitive rush | 16.320 | 2 | 8.160 | 20.382 | .000 |
| | Behavioral impulsivity | 6.637 | 2 | 3.319 | 6.349 | .002 |
| | Impatience/insomnia | 4.599 | 2 | 2.300 | 5.003 | .007 |
| Place of residence | Impulsive personality scale | 6.145 | 2 | 3.072 | 11.658 | .000 |
| | Cognitive rush | .704 | 3 | .235 | .586 | .625 |
| | Behavioral impulsivity | .151 | 3 | .050 | .097 | .962 |
| | Impatience/insomnia | 1.288 | 3 | .429 | .934 | .425 |
| Economic situation | Impulsive personality scale | .162 | 3 | .054 | .205 | .893 |
| | Cognitive rush | 2.183 | 2 | 1.092 | 2.727 | .067 |
| | Behavioral impulsivity | 2.155 | 2 | 1.077 | 2.061 | .129 |
| | Impatience/insomnia | 2.415 | 2 | 1.207 | 2.627 | .074 |
| Error | Impulsive personality scale | 2.115 | 2 | 1.057 | 4.012 | .019 |
| | Cognitive rush | 103.295 | 258 | .400 | | |
| | Behavioral impulsivity | 134.848 | 258 | .523 | | |
| | Impatience/insomnia | 118.578 | 258 | .460 | | |
| Total | Impulsive personality scale | 67.998 | 258 | .264 | | |
| | Cognitive rush | 3817.519 | 268 | | | |
| | Behavioral impulsivity | 3186.640 | 268 | | | |
| | Impatience/insomnia | 3109.571 | 268 | | | |
| | Impulsive personality scale | 3307.986 | 268 | | | |

Furthermore, Table 5 shows that there are differences according to the educational level variable, while the results did not show differences on the rest of the variables, except for differences in the cognitive rush dimension. According to the age variable, and to find out the significance of the differences, dimensional comparisons were made using the LSD method.

Additionally, a dimensional comparison was performed using the LSD method. Table 6 illustrates the advantages of the 18.20 category over the 20.23 category.

Table 6. Dimensional comparisons using the LSD method for the scale of personality traits by age.

| Dimension | (I) Age | (J) Age | The difference between the two averages | Significance |
|----------------|--------------|--------------|---|--------------|
| Cognitive rush | 18-20 | 20-23 | .2693(*) | .008 |
| | | 24 and above | .1358 | .124 |
| | 20-23 | 18-20 | -.2693(*) | .008 |
| | | 24 and above | -.1335 | .205 |
| | 24 and above | 18-20 | -.1358 | .124 |
| | | 20-23 | .1335 | .205 |

Table 7. Dimensional comparisons using the LSD method of personality traits scale by educational level.

| Dimension | Education level | Education level | The difference between the two averages | Significance |
|-----------------------------|-----------------|-----------------|---|--------------|
| Cognitive rush | Secondary | University | .1181 | .225 |
| | | Graduate | .7721(*) | .000 |
| | University | Secondary | -.1181 | .225 |
| | | Graduate | .6540(*) | .000 |
| | Graduate | Secondary | -.7721(*) | .000 |
| | | University | -.6540(*) | .000 |
| Behavioral impulsivity | Secondary | University | .4168(*) | .000 |
| | | Graduate | .5571(*) | .000 |
| | University | Secondary | -.4168(*) | .000 |
| | | Graduate | .1404 | .212 |
| | Graduate | Secondary | -.5571(*) | .000 |
| | | University | -.1404 | .212 |
| Impatience/insomnia | Secondary | University | .4072(*) | .000 |
| | | Graduate | .3759(*) | .003 |
| | University | Secondary | -.4072(*) | .000 |
| | | Graduate | -.0313 | .766 |
| | Graduate | Secondary | -.3759(*) | .003 |
| | | University | .0313 | .766 |
| Impulsive personality scale | Secondary | University | .3140(*) | .000 |
| | | Graduate | .5684(*) | .000 |
| | University | Secondary | -.3140(*) | .000 |
| | | Graduate | .2543(*) | .002 |
| | Graduate | Secondary | -.5684(*) | .000 |
| | | University | -.2543(*) | .002 |

The dimensional comparisons of the personality trait scale were determined

using the LSD method. Table 7 demonstrates significant differences between the postgraduate category and both the secondary and university categories, with the latter two categories exhibiting more favourable outcomes.

Table 8 demonstrates a statistically significant relationship between personality traits related to impulsive behaviour and the extent of e-cigarette use, at a significant level of $\alpha .05$. Personality traits account for 13.6% of the variation in e-cigarette use. This relationship is influenced by both behavioural impulsivity ($b = 0.208$) and impatience/insomnia ($b = 0.236$).

Table 8. Multiple progressive regression analysis of the effect of the contribution of cultural intelligence and psychological hardness in predicting academic adaptation among university students within the Green Line

| Prototype | Non-standard transactions | | | Value of t | Significance Level | Correlation coefficient (R) | Explained contrast 2R | Correlation coefficient Rate |
|---|---------------------------|----------------|-----------------|------------|--------------------|-----------------------------|-----------------------|------------------------------|
| | Regression coefficient | Standard error | Beta Modulators | | | | | |
| (Constant) | .732 | .429 | | 1.706 | .089 | | | |
| Cognitive rush | -.059 | .104 | -.036 | -.570 | .569 | | | |
| Behavioral impulsivity | .325 | .105 | .208 | 3.101 | .002 | .369(a) | .136 | .126 |
| Impatience/insomni a | .391 | .109 | .236 | 3.574 | .000 | | | |
| P value 13.876 Significance level 0.000 | | | | | | | | |

* Statistically significant at the significance level (.05)

5. Discussion and Conclusion

The arithmetic averages of the impulsive personality scale indicate high levels of impulsivity. Cognitive impulsivity has the highest average (3.71), indicating a significant level of impulsivity. This is followed by behavioural impulsivity with an average of 3.37, also indicating a large level of impulsivity. In the last place, impatience/insomnia has an average of 3.33, suggesting a moderate level of impulsivity. The calculated general average is 3.47. The observed outcome can be attributed to the cognitive impulse being most strongly opposed to penetration, while the impulsive personality traits exhibited the lowest degree of such opposition within the target study group.

Furthermore, the target group of adolescents who are characterized by a high

degree of behavioral impulsiveness, cognitive and curious and may be due to the inability to be careful and calm in the members of the target study and a sense of desire to know a lot of things and rush towards them and this can be evidenced by what Piaget pointed out in his cognitive theory (Piaget, 1970) and cognitive theories that addressed cognitive impulsivity (Lockwood et al., 2017; Moreno-López et al., 2012; Willhelm et al., 2016). The results of some studies have also shown that adolescents suffer from impatience, cognitive uncertainty, age, and some hormones such as: testosterone is one of the influences on their impatience, especially in adulthood and biological changes (Laube et al., 2017; Moreno-López et al., 2012; Sutter et al., 2013; Tymula, 2019).

It was also found that there are differences according to the variable of educational level, the postgraduate category, and both the secondary and university category in favor of the secondary category, followed by the university category. Meanwhile, the above result can be explained by the fact that the study group with the lowest age and level of education have some cognitive beliefs that push them to practice some behaviors and rush towards some practices that they do repeatedly and without a clear cognitive and cognitive focus in the procedures they perform logically. Accordingly, the most impulsive group eating electronic cigarettes, they are from the category of the youngest and lowest level of education and have no knowledge and information about the harms and effects of smoking in their lives in general.

While the results did not show that there were differences on the rest of the variables, except for the presence of differences on the dimension of cognitive impulsivity. According to the age variable, there were differences between the 18-20 category and the 20-23 category, and the differences were in favor of the 18-20 category, Also, the result indicates that individuals from the lesser study group are more exposed to smoking, impulsivity and wrong behavioral practices that make them more suffering from these practices and dealing with them, and this may indicate the weakness of their practical skills and their abilities to psychological and social adjustment due to their age and the emotional characteristics of adolescents (Gullone & Moore, 2000; Klimstra, 2013; Pullmann, Raudsepp, & Allik, 2006; Stamates et al., 2023).

Accordingly, a statistically significant effect found at the significance level ($\alpha =$

.05) of personality traits associated with impulsive behavior by predicting the level of e-cigarette use, and it is noted that personality traits were clarified (13.6%) of the variation in the use of e-cigarettes, where there was an effect of both behavioral impulsivity ($b=0.208$) and impatience/insomnia ($b=0.236$) using electronic cigarettes. The above result can be explained by the nature of the psychosocial characteristics and personality traits of adolescents, as well as the nature of the stage they are going through and the holistic changes they are going through, from all different aspects that are usually different between different changes they suffer from in all aspects of their social, cognitive, behavioral as well as psychological life (Blok et al., 2023; Frazier et al., 2023; Jiang et al., 2023; Kapitány-Fövény et al., 2020; Khurana et al., 2022; Mittal et al., 2022; Pokhrel et al., 2023; Romm et al., 2023; Stamates et al., 2023).

Many studies in literature reported findings related to impulsive behavior of e-smoking. According to Harvanko et al. (2019), adolescents are engaged in the act of smoking, which has a detrimental impact on their overall health and well-being. It is the responsibility of parents to educate adolescents on the detrimental health effects associated with smoking and discourage them from engaging in such behavior. According to Brown and Faulkner (2023), the availability of cigarettes has also witnessed an increase over time, primarily attributed to advancements in technology. The ready accessibility of e-smoking devices to minors is a significant concern for their overall well-being. According to Masiero et al. (2019), there exists a correlation between human personality and smoking behaviour. Certain individuals have reluctance to engage in smoking due to concerns regarding potential health implications. According to Romm et al. (2023), there are other persons who have cultivated the practice of smoking during their adolescence.

In accordance to Watanapongvanich et al. (2021), there is a growing prevalence of nicotine consumption, which is contributing to the uptake of smoking among students. This phenomenon can also be attributed to the students' condition of sadness, as the act of consuming nicotine through smoking offers a perceived mental solace. According to Syan et al. (2021), it is imperative to prevent the onset of depression to mitigate the likelihood of engaging in smoking behaviour. The human psyche exhibits variations when examined through the lens of gender, and similarly,

patterns of smoking consumption are influenced by gender. According to [Bos et al. \(2019\)](#), women have lower rates of smoking engagement in comparison to men. Smoking has emerged as a cultural phenomenon, with a significant number of students actively engaging in smoking behaviour.

According to [JJP Mathijssen et al. \(2021\)](#), the utilization of electronic smoking devices poses a significant risk to one's overall well-being. The direct impact of this substance can have detrimental effects on pulmonary function. The smokers exhibit varying attitudes. According to [Murad et al. \(2022\)](#), numerous individuals engage in impulsive smoking, driven by social influence and the encouragement of others to partake in smoking. Nevertheless, the availability of e-vaping products is a significant determinant contributing to individuals' inclination towards engaging in smoking behaviour. According to [Upton et al. \(2023\)](#), a significant number of individuals who smoke have strong motivation to enhance their overall health and willingly abandon their smoking habit in a conscientious manner. The consistent behaviour exhibited by those who smoke can serve as a protective measure to prevent excessive smoking.

In a study by [Liu et al. \(2019\)](#), contemporary generations exhibit a greater propensity towards engaging in electronic smoking. The advent of technological advancements has presented individuals with the possibility of engaging in digital vaping. This aspect is significant due to the presence of nicotine within the substance. According to [Meijer et al. \(2020\)](#), various types of medical advancements have been found to influence individuals' smoking behaviour. Implementing a method that involves reducing the consumption of nicotine flavor may be deemed appropriate to enhance the overall health of teens who exhibit a strong inclination towards smoking. According to [Zorrilla and Koob \(2019\)](#), reducing the amount of medication consumption is a beneficial strategy for mitigating the adverse effects associated with smoking.

6. Implications

This research has importance from both theoretical and practical perspective. Firstly, this study closed a loop in the body of knowledge that was remained opened by the previous studies. The study reported different personality traits that are associated with impulsive e-smoking behavior. The factors of age, education, and

personality balance are reported accordingly. This research has conducted an empirical analysis of these factors and enriched the body of knowledge. Prior to this, the studies in the body of knowledge never highlighted these factors empirically. Therefore, the study is significant from theoretical perspective as it highlighted the factors that weren't reported in the existing studies in literature.

From the practical perspective, this research has the following recommendations. Firstly, it pointed out the importance of holding counseling and treatment programs that contribute to the rehabilitation and training of adolescents to achieve balance in personality and reduce their levels of impulsive behavior. Similarly, the study reported the importance of drawing the attention of decision-makers in building and adopting curricula by focusing on students' different thinking skills, to achieve their ability to think positively, which helps to be patient and reduce their level of cognitive impulsiveness. Thirdly, this study emphasized directing specialists to hold guidance programs and preventive meetings to spread cultural awareness about the harms of smoking and its negative effects on the individual. Working in these directions would be helpful to improve the health condition of teenagers regarding their smoking behavior.

7. Future Directions

This research has significantly contributed to the body of knowledge based on its findings. Importantly, the study has provided empirical justifications for its results. However, there are some future directions based on the limitations of this study. The scholars are required to consider these future directions in their studies to close further loops in the body of literature. Firstly, the studies in future should be conducted on interview based of data, as it would be helpful to determine further predictors of impulsive smoking behavior. This direction is critical to contribute scholarly findings in the body of literature. Furthermore, the studies in future should be designed to measure a complex model, like to determine the impact of health behavior on the impulsive smoking behavior of teenagers. It would be good to contribute scholarly findings to the body of literature. Thirdly, the studies should measure the consequences of impulsive smoking behavior because many studies in literature have

determined factors leading to impulsive smoking, but the consequences' part remained unnoticed. Hence, these findings would be appropriate to contribute reliable knowledge in the literature, and it would provide new directions to the researchers. Therefore, these directions are worthy to be considered in the future studies for significant contribution.

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