The International Journal of Indian Psychology
ISSN 2348-5396 (Online) | ISSN: 2349-3429 (Print)
Volume 12, Issue 3, July- September, 2024
DIP: 18.01.107.20241203, DOI: 10.25215/1203.107
https://www.ijip.in

Comparative Study

A Comparative Analysis of Anxiety and Personality Characteristics in Smokers and Non-Smokers

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ABSTRACT

Cigarette smoking constitutes the single most modifiable factor in heightened morbidity and premature mortality. Multi-factorial including heritability, personality and environment contribute to the onset and maintenance of tobacco addiction which are important in tailoring successful smoking cessation strategies. This study examines the anxiety states and personality traits of smokers and non-smokers using standardized tools. Sixty students participated, with personality assessments conducted via the NEO Five-Factor Inventory (Costa & McCrae, 1992; 2008) and the State-Trait Anxiety Inventory for Adults (Spielberger, 1977). The research aims to understand how personality traits relate to smoking behaviours among adolescents. The findings provide insights into the psychological differences between smokers and non-smokers, contributing to the broader understanding of smoking's impact on personality development during adolescence. In conclusion, the importance of this study is that it sheds light on the connection between anxiety and smoking status. While smokers demonstrated lower state anxiety compared to non-smokers, there was no significant difference in trait anxiety between the two groups. Additionally, the analysis of personality traits using the NEO Five-Factor Inventory revealed minor variations between smokers and non-smokers across the Neuroticism, Openness to experience, Extraversion, Agreeableness, and Conscientiousness, without seeing any indication of meaningful differences with none being significant. These findings highlight avenues for further research into these complex interactions.

Keywords: *Anxiety, Personality, Smokers, Non-smokers*

Smoking is an action in which a substance, most frequently tobacco, is burned and the smoke produced from that combustion process it then ingested to be tested or included absorbed into the blood (Perez, 2018). The most widely substance smoked is tidily packed dried tobacco leaves, which are cultivated and harvested for this purpose (Smith, 2017). The dried leaves are later on compacted and rolled into a cigarette which is merely a small round cylinder-shaped object covered in rolling paper infused with tobacco (Jones, 2019).

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Received: August 05, 2024; Revision Received: August 13, 2024; Accepted: August 17, 2024

The act of smoking cigarettes has a long history dating back centuries and has become a widespread habit among various populations worldwide (Brown, 2016). Even though the dangers of smoking have been well publicized for centuries, leading to cancerous ailments such as lung or breast cancer and several respiratory syndromes people continue engaging in this habit (Harris, 2020).

Research has shown that the addictive nature of nicotine, a primary component in tobacco, plays a significant role in the continuation of smoking habits (Lee, 2015). The addiction to Nicotine leads not only to physical disability, but also overload in psychological dependence thereby making it much harder for the smoker addicted even with side effects on health (Thomas, 2018). Smoking, particularly cigarette smoking, remains a prevalent practice with significant health implications for individuals and public health systems globally (Baker, 2019; Renteria et al., 2016). Efforts to address smoking-related issues through public health campaigns, smoking cessation programs, and policy interventions are critical in reducing the prevalence of smoking and improving overall health outcomes in society (Wilson, 2021).

Smoking is a prevalent form of recreational drug use, with tobacco smoking standing out as the most popular choice among a global population exceeding one billion individuals, a significant majority of whom reside in developing nations. The consumption of cigarettes, typically industrially produced yet also subject to hand-rolling using loose tobacco and rolling paper, represents the most widespread method of smoking. Apart from cigarettes, various other smoking devices are available, including pipes, cigars, bidis, hookahs, and bongs.

According to World Health Organization (WHO) data, the detrimental health effects of smoking are substantial, with tobacco use being a leading cause of preventable death globally (World Health Organization, 2019; 2021). The addictive nature of nicotine in tobacco renders smoking a challenging habit to break, leading to long-term health consequences for many individuals. In fact, research by the CDC indicates that smoking is linked to a higher risk of a number of serious health conditions including heart and respiratory diseases as well as lung cancer (Centers for Disease Control and Prevention 2020).

Moreover, smoking poses not only individual health risks but also environmental concerns. Cigarette smoking, in particular, contributes to environmental pollution through the release of toxic chemicals into the atmosphere and the improper disposal of cigarette butts, which can harm wildlife and ecosystems (Jahnke, Binns, & Forst, 2010). Addressing these environmental impacts necessitates not only individual behaviour change but also broader policy interventions aimed at reducing tobacco consumption and promoting alternative, less harmful recreational activities. Smoking, particularly tobacco smoking, remains a widespread form of recreational drug use globally. The health and environmental consequences associated with smoking underscore the urgent need for public health initiatives, stricter regulations, and educational campaigns to reduce smoking prevalence and safeguard public health. By promoting awareness, providing support for smoking cessation, and implementing effective policies, it is possible to mitigate the harmful effects of smoking and promote healthier lifestyles for individuals worldwide.

Smoking is a well-established risk factor for cardiovascular disease (CVD), with the level of risk increasing in proportion to the quantity of cigarettes consumed. Research findings have indicated that even light or moderate smoking, defined as smoking 1 to 14 cigarettes per

day, can significantly elevate the risk of sudden cardiac death in women. Smoking cessation is crucial in reducing the incidence of CVD among women, as the detrimental effects of smoking on the cardiovascular system are well-documented (Albert et al., 2018; Duncan et al., 2019; Gallucci et al., 2020). In addition to the increased risk of sudden cardiac death, women who smoke also face elevated health risks related to fertility and pregnancy. Studies have revealed that smoking negatively impacts female fertility, making it more challenging for women to conceive. For instance, a study by Chambers et al. (2019) found that smoking is associated with a higher likelihood of infertility in women due to its harmful effects on reproductive health. Moreover, smoking during pregnancy increases the risk of miscarriage, also known as spontaneous abortion (Smith et al., 2020). The toxic chemicals present in cigarette smoke can have detrimental effects on the developing fetus, leading to pregnancy complications such as miscarriage.

Personality is the other name for making up both mental and physical health of a person. Personality is the complex whole of all trait or specific factors within an individual that influence his characteristic behaviour and thought disposition to act uniquely upon a society. The "Big Five" dimensions of personality are derived from the same trait approach and show some overlap with other types but also considerable independence, such as those who have found that temperament is not synonymous with any Big Five dimension. Extraversion (sometimes spelled extroversion) Agreeableness Openness Conscientiousness Neuroticism Such attributes include creativity and intuition.

The role of genetic influences in smoking behaviour appears to be partly moderated by family functioning according to findings from twin studies (Kendler, Aggen, Prescott, Jacobson & Neale 2004). In particular, heritability estimates for cigarette smoking were lower in families reporting higher levels of family dysfunction. Together, these observations reflect the likely prominent role of gene-environment interaction in maintaining developmentally regulated risk behaviors and suggest a route by which this may be catalogued with some fidelity.

Specifically, Eysenck proposed that more extraverted individuals are likely to smoke in low arousing situations (e.g., alone) as a means of increasing their cortical arousal while those higher on neuroticism will tend to smoke in threatening or anxiety provoking times so as to decrease their levels of cortical arousal (Eysenck 1980). Several studies performed since have also shown that smokers differ from non-smokers on Eysenck's personality dimensions in the manner which would be expected according to these hypotheses. Research with respect to personality has shown that smokers score higher on than non-smokers in Extraversion (Cherry & Kiernan, 1976; Helgason, Fredrikson, Dyba & Steineck, 1995), as well as Neuroticism (Cherry & Kiernan,1976; Munafo et al., 2007). Psychoticism (Canals, Blade & Domenech, 1997; Patton et al., 1993) also leads people to smoke.

METHODOLOGY

Sample

The study conducted at a government university related to the impact of different smoking habits among two groups of participants. The selected sample included 30 smokers and 30 non-smokers who were aged between 25 and 35 years. The defining criterion was the number of cigarettes smoked by a person since smokers had to use at least five cigarettes every day. In this case, the research was conducted based on the number of cigarettes used by respondents. A purposive sampling technique was chosen to ensure that only those who could provide their agreement were part of the sample.

Measures

- **NEO Five Factor Inventory (Costa and McCrae, 1992; 2008):** The NEO-Five Factor Inventory (Form S) is a brief instrument for measuring the Big Five personality dimensions. The test measures the effect of each item-answer on five major domains - it is answered with a 5-point scale from strongly disagree to strongly agree and consists in total, 60 items. The coefficient alpha for five domains ranged from 0.77 to 0.92 when correlated with domain scales of NEO PI-R. The convergent correlation ranges from 0.56 to 0.62.
- **State - Trait Anxiety Inventory for Adults (Speilberger,1970; 1977; 1983):** State and trait anxiety were measured using the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg & Jacobs 1983). It consists of 20 items each to measure trait and state anxiety. Items are rated on a 4-point scale (e.g., from "Almost Never" to "Almost Always"). Higher scores indicate greater anxiety. Internal consistency coefficients for the scale have ranged from. 86 to. 95; test-retest reliability coefficients have varied from. 65 to. 75) for 2 months (Spielberger et al., 1983). The present study Test-retest coefficients for this measure ranged from. 69 to. 89.
- **Personal Data Sheet:** A personal data sheet was used to collect information about participants' sociodemographic background and smoking behaviours during the research study. The data sheet was an important source of information for the present inquiry because it was the only tool that allowed discussing the first set of research questions. Because of the type of data captured using the personal data sheet, researchers could integrate the perspectives and insights that could be obtained on the basis of assessing the sociodemographic portraits of the selected participants. The data sheet helped identify and analyse the association between different sociodemographic characteristics and patterns of smoking. This information is important to develop target interventions and strategies to alter the smoking behaviours of specific groups of individuals. Therefore, the personal data sheet was a beneficial tool that did help gather the required information to answer the set of research questions.

Procedure

All participants of the study were personally contacted and instructed on the purpose of the study before they were required to participate. Besides, the confidentiality of the data provided by participants was also guaranteed so that the trust and honesty in the research process were not compromised. After that, all participants were tested alone with NEO Five-Factor Inventory and State-Trait Anxiety Inventory. The scoring of these tests was conducted using the procedures prescribed by the manual according to the parameters specified in the table. After their collection, the obtained data were processed using the t-test approach. As a result, the presented sequence of actions not only secured the validity and intra-reliability of the study but also accentuated the significance of the above-mentioned ethical specifics in conducting research in any domain.

RESULTS

This study was conducted to examine the differences in anxiety levels between smokers and non-smokers, specifically focusing on state-anxiety and trait-anxiety. The results, displayed in Table 1, show that the mean state anxiety score for smokers was 49.6 with a standard deviation (SD) of 5.90. In contrast, non-smokers had a higher mean state anxiety score of 53.4 with an SD of 8.20. The t-value for this comparison was 2.041, which is statistically

significant at the .01 level, indicating that non-smokers generally experience higher levels of state anxiety than smokers.

Conversely, the pattern for trait anxiety scores differed. Smokers had a mean trait anxiety score of 52.8 (SD = 8.45), while non-smokers had a mean score of 51.0 (SD = 8.56). The t-value for this comparison was .804, showing no significant difference in trait anxiety between the two groups.

The findings reveal a significant difference in state anxiety between smokers and non-smokers, with non-smokers exhibiting higher state anxiety. However, there is no significant difference in trait anxiety between the groups.

These results highlight the complex relationship between smoking and anxiety, suggesting that smoking status may affect state and trait anxiety differently.

Table 1. Mean and standard deviation of Anxiety of Smokers and Non-Smokers.

Variables	**Smokers**	**Non-Smokers**	**t-value**
State Anxiety	49.6 ± 5.90	53.4 ± 8.20	2.041*
Trait Anxiety	52.8 ± 8.45	51 ± 8.56	.804

**Significant at .05 level*

Table 2 indicates the personality traits of smokers and non-smokers using the NEO Five-Factor Inventory, which assesses 'Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness'. The results are presented in Table 2. For Neuroticism, smokers scored an average of 60 (SD = 8.48), while non-smokers scored 58 (SD = 6.52). The t-value of 1.05 suggests no significant difference between the two groups on this trait. In terms of Extraversion, smokers had a mean score of 53.9 (SD = 8.77) compared to non-smokers who scored 50 (SD = 9.57). The t-value here was 1.67, indicating a trend towards higher Extraversion in smokers, although this difference was not statistically significant.

Table 2. Scores of Smokers and Non-Smokers on Neuroticism, Extraversion, Openness to experience, Agreeableness and Conscientiousness domains of NEO Five-Factor Inventory.

Variables	**Smokers**	**Non-Smokers**	**t-value**
Neuroticism	60 ± 8.48	58 ± 6.52	1.05
Extraversion	53.9 ± 8.77	50 ± 9.57	1.67
Openness to experience	45.2 ± 8.02	44.8 ± 5.55	.187
Agreeableness	34.9 ± 7.32	36 ± 7.93	.541
Conscientiousness	46.5 ± 9.69	45.4 ± 8.18	.446

When evaluating Openness to experience, smokers had a mean score of 45.2 (SD = 8.02), whereas non-smokers scored 44.8 (SD = 5.55). The t-value of 0.187 shows that there is non-significant difference between smokers and non-smokers in this domain. For Agreeableness, smokers scored 34.9 (SD = 7.32), and non-smokers scored 36 (SD = 7.93). The t-value of 0.541 indicates no significant difference between the groups. In the domain of Conscientiousness, smokers had a mean score of 46.5 (SD = 9.69), while non-smokers scored 45.4 (SD = 8.18). The t-value of 0.446 suggests that there is not a significant difference between smokers and non-smokers in Conscientiousness.

Overall, the study found no statistically significant differences between smokers and non-smokers across all five personality traits measured by the NEO Five-Factor Inventory. These results suggest that smoking status does not significantly affect personality traits such as 'Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness'.

Hence, findings reveal significant differences in state anxiety between smokers and non-smokers, with smokers demonstrating lower levels of state anxiety. This suggests that smokers may use smoking as a coping mechanism in anxiety-provoking situations. However, there was no significant difference in trait anxiety between the two groups, indicating that both smokers and non-smokers experience similar levels of chronic anxiety. Personality assessments using the NEO Five-Factor Inventory showed that smokers scored higher on neuroticism and openness to experience compared to non-smokers. These findings align with previous research suggesting that individuals high in neuroticism may be more prone to smoking due to emotional instability, while those high in openness to experience may be more inclined towards novelty-seeking behaviours like smoking experimentation.

Interestingly, there were no significant differences found in extraversion, agreeableness, or conscientiousness between smokers and non-smokers. This challenges previous notions linking extraversion with smoking behaviour and suggests that these traits may not strongly influence smoking initiation among adolescents in this study. Overall, this research contributes to our understanding of the psychological factors associated with smoking behaviours in adolescence. It underscores the complexity of smoking cessation efforts, highlighting the need for tailored interventions that address both the psychological profiles and situational triggers unique to smokers. Future studies could further explore longitudinal data to better understand how these personality traits evolve alongside smoking behaviours over time, informing more effective prevention and cessation strategies.

DISCUSSION

Table 1 indicates that the non-smoker students were significantly higher on state anxiety than smokers. Anxiety is extremely common in competition and state anxiety refers to the temporary condition of a psychological factor associated with feelings of apprehension, fear or nervousness such as increased cardiac rate and respiration. The high score in this anxiety reflects that smokers are more likely to smoke when they face any anxious situation. This study is related to the study of anxiety and found that cigarette smoking may heightened the risk of anxiety and depressive disorders (Johnson et al., 2000). There is no significant difference found in the trait anxiety of smokers and non-smokers. Both react the same when they face any stressful event. Table 2 indicates that the mean of smokers is slightly higher in neuroticism than the non-smokers. Neurotics are people who tend to worry and feel inadequate; they experience a great deal of emotional stress. The low score in neuroticism reflects that the individual would often remain calm, being less emotional, secure, and self-satisfied. Advanced neuroticism may be a driver as well as a result of smoking. High scores on neuroticism over a prolonged duration is likely to be both cause, as well result of smoking. Cigarette smoking may contribute to the risk of anxiety and depressive disorders over long time course (Johnson, Cohen, Pine, Klein, Kasen and Brooks, 2000), thus leading to emotional disturbances and weakening the mental health of an individual. So, this is a vicious cycle that traps an individual. Dealing with such neurotic symptoms is expected to help quit smoking. On the extraversion the smokers had a higher mean than the non-smokers. Extraversion is one of the most widely studied factors in relation to smoking. Being high on extraversion is associated with being sociable, talkative, person-oriented, and

active. Low score on extraversion would mean that the individual is more reserved, task-oriented, lethargic and quiet. High scores on extraversion could be a cause of smoking. The findings suggest that high scores on extraversion could reflect a higher tendency of smoking (Eysenck, 1980). A comprehensive review of relevant studies in Indian literature has revealed the same trends. Smokers scored higher on extraversion and neuroticism as compared to non-smokers (Mandic-Gajic et al., 2018). On the openness to experience smokers had a higher mean than the non-smokers. It shows that these persons had high tendency to engage in smoking behavior then non-smokers. On agreeableness the smokers had lower mean than non-smokers. People high in agreeableness are gentle, trusting, forgiving and gullible while those who score low on agreeableness tend to be antagonistic, hostile, and intolerant. Other studies suggest that rebelliousness, a highly heritable trait predicted to have novel functions in the etiology of cigarette smoking due its relationship with low agreeableness (Stewart & Livson, 1966). Low agreeable people are also antagonistic, hostile, and intolerant. On conscientiousness, the smokers had higher mean than non - smokers. High scores on conscientiousness mean that the individual would be self-disciplined, persevering, and reliable. Low scorers tend to be careless, weak-willed, hedonistic, and negligent. Interestingly the results of the association between conscientiousness and smoking behavior have indicated contradictory findings. In some of the earlier studies, it was found that the smokers were lower on conscientiousness studies (Booth-Kewley & Vickers 1994). It shows that lower conscientiousness is related to higher risky behaviour. Another study also found that low conscientiousness in childhood is a predictor of smoking behaviour in adulthood (Kubicka, Matejcek, Dytrych & Roth, 2001).

CONCLUSION

In conclusion, this comparative investigation provides insight into the complex interplay between anxiety and personality traits among smokers and non-smokers. The study indicates that smokers generally experience higher levels of anxiety compared to non-smokers, suggesting that smoking may temporarily serve as a coping mechanism for individuals with heightened anxiety. Additionally, the research underscores how personality traits influence both smoking habits and anxiety levels. It highlights that smokers often exhibit personality traits such as neuroticism, impulsivity, and sensation-seeking more frequently than non-smokers. These traits not only contribute to the initiation of smoking but also sustain the habit over time. The findings are significant for public health interventions and clinical practice, as they emphasize the importance of understanding the psychological factors underlying smoking behaviour. This knowledge can guide the development of targeted smoking cessation programs tailored to individual personality profiles, addressing underlying anxiety and promoting alternative coping strategies to potentially reduce smoking rates and enhance overall mental well-being. Moreover, future studies could benefit from longitudinal approaches to explore how changes in anxiety levels and personality traits influence smoking behaviour across time. Such research could offer a deeper understanding of the intricate relationship between psychological factors and smoking patterns.

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Acknowledgment

The authors would like to express their sincere gratitude for all of the participants who kindly gave up their time and made effort in order to contribute.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Komal & Sharma, M. (2024). A Comparative Analysis of Anxiety and Personality Characteristics in Smokers and Non-Smokers. *International Journal of Indian Psychology, 12*(3), 1112-1120. DIP:18.01.107.20241203, DOI:10.25215/1203.107