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Personality and Smoking Behaviour of Non-Smokers, Previous Smokers, and Habitual Smokers

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Abstract

People continue to smoke despite the fact of widely known health risks associated with this behavior. This study evaluated the differences across personality factors and smoking behaviors between smokers and previous smokers as well as a non-smoking comparison sample. Data analysis indicated a significant difference in personality characteristics of smokers and non-smokers in the facets of Openness to Experience and Conscientiousness. Smokers were found to have significantly higher qualities of Openness to Experience and significantly lower levels of Conscientiousness. No significant differences in smoking status were found regarding the onset of smoking or the presence of family members who smoke.

Keywords: Extraversion; Neuroticism; Smoking behavior

Introduction

The idea that personality factors are linked to why people smoke has been researched previously, yielding mostly consistent results that smokers score high on extraversion and neuroticism personality scales [1-4]. In addition, a relationship has been identified between depression and smoking behaviour. Joseph et al. [3] reported that negative affect control and automatic habitual smoking are specifically associated with depression. Though it has been established that both personality factors and depression are linked to smoking behavior, it is still unclear what exactly prevents individuals from quitting. Patton et al. [5] concluded that if a smoker has high neurotic and psychotic personality traits, such features will cause them to experience difficulty in quitting. However, Joseph et al. [3] concluded that personality factors alone did not account for the maintenance of smoking, but rather a person must possess both the personality traits and depression to affect their ability to quit smoking. This finding was supported by Yazici [6] who also found that having depressive symptoms operated as a significant risk factor for smoking maintenance.

Nicotine dependence is another substantial contributing factor as to why smokers experience difficulty quitting. According to the Department of Health and Human Services [7], cigarette smoking is as addictive as cocaine or heroin. Furthermore, as indicated by the Department of Health Education and Welfare [8], 'Perhaps the most important reason for the high addictive potential of cigarette smoking is that it does not impair performance. Unlike alcohol and many other drugs of dependence, nicotine enhances rather than impairs the capacity of normal people to work and socialize. There are therefore, no immediate negative consequences.' Due to nicotine's highly addictive capabilities and positive immediate consequences, severity of dependence could be a greater influence on smoker's inability to quit than previously considered.

Patton et al. [2] suggest that smokers are often more psychologically unhealthy than the general population, characterized by presentation of higher scores in psychoticism and neuroticism and lower scores in self-esteem and ego strength. The observed low scores on self-esteem and ego strength could be attributed to smoking as a maladaptive attempt of controlling negative emotions. This hypothesis is supported by research indicating people frequently smoke to cope with negative emotions, while highly neurotic individuals smoke for a variety of emotional reasons [3]. According to Munafo and Black [4], a person is more likely to be a heavy smoker if they have higher levels of neuroticism. Furthermore, the presence of high extraversion personality scores decreased the odds of being a heavy smoker. Extraverted individuals may not be heavy smokers, but Patton et al. [2] found that the most extraverted group in their study were smokers, showing that they still have higher extraversion scores than the general population. Extraversion was linked with smoking cessation, while neuroticism was not, which implies that neuroticism may be a more influential factor in why smokers have trouble quitting [4].

Smoking behavior has additionally been examined considering the interplay between personality and environmental influences. Frith [9] divided smokers into two classes: those in boring situations who need to increase cortical arousal and those who smoke due to stress. Joseph et al. [3] suggested that introverted smokers used cigarettes to enhance their social skills, which corresponds with Frith's category of need to increase cortical arousal. Frith [9] reported that smokers desired cigarettes more in low arousal situations compared to high arousal situations overall, but also found that heavy smokers desire to smoke in both situations. Neurotic smokers aligned into Frith's category of those who smoke due to stress as well as those who desire to smoke in both situations, because they are more often heavy smokers [4].

Above and beyond personality, gender influences may additionally be considered during investigation of smoking behavior, and, according to Frith [9], men reported a higher desire to smoke when bored while woman indicated a higher desire to smoke while under stress. However, according to Patton et al. [2], male smokers reported significantly higher levels of neuroticism compared to their non-smoking counterparts, yet this difference in neuroticism was not observed between female smokers and non-smokers. These findings

appear to contradict one another due to level of neuroticism being positively correlated as a means of coping with negative emotions. Thus the contributing part gender plays in why people smoke remains muddled. Nevertheless, males were more likely than females to be current smokers, so gender may have an effect on smoking behavior [4].

The literature has highlighted a variety of other factors that influence smoking behavior, one being whether or not a person's parents smoked at any point while they were growing up [6]. According to Patton et al. [5], some other factors include starting smoking at an early age and having other alcohol-related problems and symptoms, interestingly, these factors were linked to having high neuroticism personality scales as well.

The present study aimed to clarify the relationship between personality factors and current smoking status, specifically the facet of neuroticism. Additionally, examination of environmental influences such as family history of smoking was considered for analysis. Finally, severity of nicotine dependence was included as a contributing factor for maintenance of smoking behavior.

Methods

The study was composed of 69 graduate students, 43 females and 26 males, who attended a university in the Southeastern United States. The participants ranged in age from 21-years-old to 50-years-old, (mean=26.91, SD=7.14). There were 19 habitual smokers, 19 previous smokers, and 31 non-smokers. Participation was entirely voluntary with no financial compensation or academic incentive.

Each participant was given a randomly formatted packet of self-report measures that included the Situation X Trait Adaptive Response Smoking Motivation Questionnaire (STAR_SMOQ), Fagerstrom Test for Nicotine Dependence (FTND), the NEO Big 5 Inventory and a Smoking Questionnaire designed for the investigation. Non-smokers completed the Smoking Questionnaire and the NEO Big 5 Inventory. Previous-smokers completed the Smoking Questionnaire, STAR-SMOQ, and the NEO Big 5 Inventory. Habitual-smokers completed the Smoking Questionnaire and all other measures.

The STAR_SMOQ is a 97-item measure that assesses individual motivation and desire to smoke as well as likelihood to smoke in a variety of situations. For the purposes of this study, the Motive section was the focus. This section yields results across four motivation dimensions: Cognitive Enhancement, Pleasure Enhancement, Negative Affect Reduction, and Weight and Appetite Control. It has been found to have moderate to high internal consistencies across the motivational subscales, ranging from 0.70 to 0.94.

The NEO-PI-R, a 240-item assessment, measures five major domains of personality (Neuroticism, Extroversion, Openness to Experience, Agreeableness, and Conscientiousness), each including six facets that define each domain. The NEO-PI-R's internal consistency as calculated based on the five personality domains is high, ranging from 0.86 to 0.92. The NEO-PI-R has been tested for validity against a variety of other personality measures including the MMPI, to which it is moderately correlated along a variety of personality scales including the compulsive, borderline, avoidant, and schizoid scales.

The FTND was used to assess individuals' current levels of nicotine dependence. This six question self-report produces an overall score from 0-10, which correlates with levels of dependence from very low to very high. This instrument has been validated for use with adult and young adult populations [10,11]. Meta-analysis shows that the test has a moderate internal consistency, resulting in a Cronbach's alpha of 0.55-0.74 [12]. The FTND has also been found to have a moderate to large effect size (d =.0.60-0.71) [10].

The final measure utilized in this study was a smoking questionnaire. It consists of seven questions and designed to assess current smoking status, past smoking status, age of smoking onset, family history of smoking, social nature of smoking, motivation for smoking, and past attempts to quit smoking.

Results

A one-way ANOVA was used to test for differences across the five personality characteristics of Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness across smoking status (Table 1). A significant difference was obtained regarding Openness to Experience, F (2,66)=4.81, p=.011. A trend toward significance was found for Conscientiousness, F (2, 66)=2.99, p=.057. Post hoc analysis found significant differences between smokers and non-smokers on Openness to Experience (p=.008) with smokers scoring higher on this personality trait. Again a trend toward significance was observed for non-smokers scoring higher on Conscientiousness than smokers (p=.066). Though significant results were not found for the trait of Neuroticism as expected, this trait tended to be higher in smokers than the other two groups (Figure 1).

		Sum of Squares	df	Mean Square	F	Sig.
Neuroticism	Between Groups	2.581	2	1.291	1.502	0.23
	Within Groups	56.723	66	0.859		
	Total	59.304	68			
Extraversion	Between Groups	1.358	2	0.679	0.765	0.469
	Within Groups	58.584	66	0.888		
	Total	59.942	68			
Openness	Between Groups	5.122	2	2.561	4.806	.011**
	Within Groups	35.168	66	0.533		

	Total	40.29	68			
Agreeableness	Between Groups	0.943	2	0.472	0.477	0.623
	Within Groups	65.26	66	0.989		
	Total	66.203	68			
Conscientiousness	Between Groups	4.752	2	2.376	2.989	0.057
	Within Groups	52.465	66	0.795		
	Total	57.217	68			

Table 1: ANOVA Personality Dimensions between Smoking Status. **Significance at <.01.

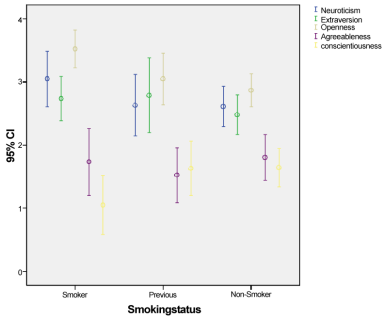

Figure1: Personality Dimensions by Smoking Status. Note: There was a significant difference between smokers and non-smokers on the openness to experience personality dimension. * p<.05.

A Pearson's correlation found that total Fagerstrom scores were positively correlated with all four aspects of motivation, including Cognitive Enhancement r(16)=.57, p=.021, Enhancement of Pleasure r(16)=.56, p=0.24, Weight and Appetite Control r(16)=.68, p=.004, and Reduction of Negative Affect r(16)=.55, p=.026 (Table 2). Thus, analysis suggests that as an individual's tolerance for nicotine increases, so does motivation for smoking in all areas. These increases were not equal, with weight and appetite tolerance presenting as the most significant motivation factor for people with higher levels of nicotine tolerance.

		CogEnhancement	WeightAppetiteControl	PleasureEnhancement	NegAffectRed	TotalKFNTC
CogEnhancement	Pearson Correlation	1	.748**	.908**	.904**	.572*
	Sig. (2-tailed)		0.001	0	0	0.021
	N	16	16	16	16	16
WeightAppetiteControl	Pearson Correlation	.748**	1	.832**	.762**	.680**
	Sig. (2-tailed)	0.001		0	0.001	0.004
	N	16	16	16	16	16
PleasureEnhancement	Pearson Correlation	.908**	.832**	1	.905**	.559*
	Sig. (2-tailed)	0	0		0	0.024
	N	16	16	16	16	16
NegAffectRed	Pearson Correlation	.904**	.762**	.905**	1	.554*
	Sig. (2-tailed)	0	0.001	0		0.026

	N	16	16	16	16	16
TotalKFNTC	Pearson Correlation	.572*	.680**	.559*	.554*	1
	Sig. (2-tailed)	0.021	0.004	0.024	0.026	
	N	16	16	16	16	16

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed).

Note: N= sample size for participants with all data.

Table 2: Correlation between Fagerstrom Nicotine Tolerance Scores and Motivation for Smoking Factors.

Personality factors were also tested against motivation factors for correlation (Table 3). Higher Cognitive Enhancement scores were correlated with higher Neuroticism r(16)=.63, p=.009. Neuroticism was also positively correlated with Enhancement of Pleasure r(16)=.56, p=.024 and Weight and Appetite Control r(16)=.580, p=.018. Individuals who reported more neurotic personality characteristics were more motivated to smoke for cognitive and pleasure enhancement, and weight and appetite control.

		CogEnhancement	**WeightAppetiteControl**	**PleasureEnhancement**	**NegAffectRed**	**Neuroticism**
CogEnhancement	Pearson Correlation	1	.748**	.908**	.904**	.628**
	Sig. (2-tailed)		0.001	0	0	0.009
	N	16	16	16	16	16
WeightAppetiteControl	Pearson Correlation	.748**	1	.832**	.762**	.580*
	Sig. (2-tailed)	0.001		0	0.001	0.018
	N	16	16	16	16	16
PleasureEnhancement	Pearson Correlation	.908**	.832**	1	.905**	.561*
	Sig. (2-tailed)	0	0		0	0.024
	N	16	16	16	16	16
NegAffectRed	Pearson Correlation	.904**	.762**	.905**	1	0.459
	Sig. (2-tailed)	0	0.001	0		0.074
	N	16	16	16	16	16
Neuroticism	Pearson Correlation	.628**	.580*	.561*	0.459	1
	Sig. (2-tailed)	0.009	0.018	0.024	0.074	
	N	16	16	16	16	16

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3: Correlation between Neuroticism and Motivation for Smoking Factors. Note: N=sample size for participants with all data.

Nicotine Tolerance scores were then correlated against personality factors to examine differences across severity of dependence (Table 4). Conscientiousness was the only factor significantly associated with Nicotine Tolerance r(16)=.47, p=.041. There was also a trend toward significant correlation between Nicotine Tolerance and Extraversions r(14)=.43, p=.065. Interestingly, despite having been a significant factor in the ANOVA, Openness to Experience did not correlate significantly with Nicotine Tolerance or any of the motivational factors.

		Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Neuroticism	Pearson Correlation	1	-.327**	-0.106	-0.035	-.333**
	Sig. (2-tailed)		0.006	0.387	0.773	0.005
	N	69	69	69	69	69
Extraversion	Pearson Correlation	-.327**	1	.357**	-0.004	0.204
	Sig. (2-tailed)	0.006		0.003	0.975	0.092
	N	69	69	69	69	69
Openness	Pearson Correlation	-0.106	.357**	1	0.136	-0.111
	Sig. (2-tailed)	0.387	0.003		0.265	0.362
	N	69	69	69	69	69
Agreeableness	Pearson Correlation	-0.035	-0.004	0.136	1	-0.023
	Sig. (2-tailed)	0.773	0.975	0.265		0.849
	N	69	69	69	69	69
Conscientiousness	Pearson Correlation	-.333**	0.204	-0.111	-0.023	1
	Sig. (2-tailed)	0.005	0.092	0.362	0.849	
	N	69	69	69	69	69
TotalKFNTC	Pearson Correlation	-0.152	0.431	0.122	0.006	.472*
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Table 4: Correlation between Fagerstrom Nicotine Tolerance Scores and Personality Dimensions. Note: N= number of participants with data on all measures.

Chi-Square analysis found that there was no significant relationship between smoking status and age at which participants started smoking when comparing smokers to previous smokers; however, it should be noted than no previous smokers began smoking after the age of 22. An interesting question for future studies may be at what age of onset smoking regardless of personality, gender and environmental influences significantly differ across smoking status; or perhaps beyond the scope of onset, how many years did a person smoke before they were able to successfully quit.

As expected, there was a significant difference in successfully quitting smoking between smokers and previous smokers, χ^2=16.7, df=3, p=.001. Descriptively, all previous smokers were successful in quitting within their first three attempts to stop smoking, with the majority finding success the first time they attempted to quit. Three current smokers had tried to stop four or more times and had been unsuccessful, and three had never attempted to quit.

Despite the findings of previous research, there were no significant differences between family smoking status and an individual's smoking status. Smokers and previous smokers had equal numbers of parents and siblings who smoked. Even more surprising, there were more non-smokers who had a family member who smoked than either of the other groups, yet this difference did not reach significance.

Discussion and Conclusions

This study supports conclusions from previous research on the existence of personality differences between smokers and non-

smokers. However, this study found that the two groups varied on different personality characteristics than has been previously identified. Smokers and non-smokers in this study were found to be different on the personality characteristic of Openness to Experience, with a trend for significant differences on the dimension of Conscientiousness. This is dissimilar to findings of Extraversion and Neuroticism to be the two primary personality factors related to smoking and difficulty quitting. These two personality dimensions played a lesser role as they were correlated with nicotine tolerance and motivation for smoking, respectively.

A consideration in the differences between the results of this study as compared to the literature may be due to the sample that was assessed. The main field of recruitment included graduate students at a private university, rather than drawing on a more random sample representative of the wider population. With a mean age of 26, participants were generally well into adulthood and also largely female. Factors that were not assessed such as IQ, socio-economic status, and culture also likely affect the results. For example, given that many participants were graduate students, it can be generally assumed that the majority had above average IQs and were also on track for living in the upper to middle class income-bracket as a result of their degrees (if participants were not already of that bracket). Demographically, the university in question also has a largely Caucasian student body, adding another factor to the consideration of the results. These sample characteristics make it difficult to extrapolate the results out to a larger population, although they do give insight into the personality factors that lead individuals in this rather elite group to be smokers.

The results regarding which personality factors were most prominent amongst the different groups of smokers were quite provocative. Future research should investigate deeper at which components of the personality dimensions weighed on these results would provide more meaning to the findings. While Openness to Experience was the most significantly different personality factor between the three groups surveyed, it was not correlated with nicotine tolerance or any of the motivational factors. It is not surprising that smokers would be open to experiences, as this factor is correlated with Extraversion, which was found to be a significant dimension in previous studies [2]. However, Extraversion itself was not significant. The factors of openness of ideas, values, and feelings may have weighed on this result suggesting that smokers may be more liberal in these areas. It follows that smokers and previous smokers would both be lower on Conscientiousness, which is negatively correlated with Openness to Experience.

Although it was expected that analysis would reveal that non-smokers would be more conscientious than smokers, it was startling to find this factor to be the one that positively and significantly correlated with overall nicotine tolerance. This result is intriguing and leaves room for speculation as to which aspects of Conscientiousness are associated with nicotine tolerance. The current findings suggest that a characteristic about addicted smokers makes them more thoughtful and considerate than others. Again, facets of Conscientiousness, such as order or achievement striving, may weigh more heavily on this result. The Fagerstrom assesses for frequency of smoking behaviors and time of smoking first cigarette. It could be that more heavily addicted smokers have higher levels of organization in their days as they schedule time around cigarette breaks. In line with Frith's [9] hypothesis, it is also possible that people who are more driven for achievement experience higher levels of stress along with this drive and use smoking as a means to modulate stress.

Neuroticism only neared significance in the overall test of variance, despite the findings in previous research identifying this as one of the most significant variables [1-4]. Although Neuroticism did not yield as much significance in regards to smoking status or nicotine tolerance as expected, it was influential in regards to motivation for smoking. For this sample, participants with higher levels of neuroticism were not necessarily more addicted to smoking, but their motivations for smoking were higher, suggesting support of previous research that individuals with higher levels of this trait smoke as a result of poor coping skills for handling emotional problems, or because they are trying to stimulate cortical arousal [2,3,9].

While family member's smoking status was not found to be significant, it is of interest that more non-smokers reported having parents and/or siblings who smoked when compared to the other groups. This brings into light the question regarding socio-economic status and educational attainments of the sample. It would be interesting to examine how differences between parents' socio-economic status during childhood and educational achievements differ from their children's, and how these differences influence whether or not individuals are smokers. Perhaps children whose parents smoke but who strived for higher educational achievements are less motivated to smoke. There could be factors of rebellion against parents in this decision, greater awareness of health risks having witnessed consequences of smoking for parents, or achievement or IQ related factors that influence smoking behaviors. Finally, the subscales of the STAR-SMOQ (cognitive enhancement, negative affect reduction, pleasure enhancement, impulse control, and appetite control) brought a level of insight into the results of this study in comparing between smokers and previous smokers. Its subscales are all strongly correlated with overall Fagerstrom scores as well, suggesting that this measure should be considered as a useful tool for future studies. The finding of extraversion and neuroticism to be the two primary personality factors related to smoking and difficulty quitting can no longer be upheld. Openness to experience and conscientiousness must be taken seriously when looking at personality dynamics. From this study health care professionals can get a better understanding of the factors that lead to the use and maintenance of tobacco smoking. In an effort to develop new intervention techniques to help individuals quit smoking, clinicians should keep in mind the importance of these new findings.

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