PERSONALITY FACTORS OF TOBACCO BEHAVIOR IN UNIVERSITY STUDENTS: COMPARISON OF CIGARETTE VS. SMOKELESS PRODUCTS USERS AND NON-SMOKERS

[a]ZUZANA ROJKOVÁ, [b]MARTA VAVROVÁ, [C]TATIANA OZIMÁ

Faculty of Arts, University of Ss. Cyril and Methodius in Trnava, Nám. J. Herdu 2, 91701 Trnava, Slovakia
email: [a]zuzana.rojkova@ucm.sk, [b]marta.vavrova@ucm.sk, [c]tatianaozima@gmail.com

This work was supported by the Scientific Grant Agency of the Ministry of Education, science, research, and sport of the Slovak Republic and the Slovak Academy of Sciences under the no. VEGA 1/0203/20

Abstract: The paper is aimed at the issue of tobacco behavior, specifically at the use of smokeless tobacco products. The goal of the study is to unravel the differences in personality traits among smokers and users of smokeless tobacco products in comparison with a non-smoker group, with regard to gender. The data were obtained by use of a battery composed of EPQ_R, STAI, and questions for the identification of the form of tobacco behavior. The sample was made up of 202 university (48.5% males, 51.5% females) aged 19-27. The results suggest a preference for the use of smokeless tobacco products in females, a higher degree of extraversion, and psychoticism in the users´ personality profiles (in comparison with non-smokers) with no difference according to form of tobacco behavior. Further, anxiousness was discovered to be a protective factor in females while neuroticism was discovered to be a risk factor (for tobacco behavior) in males.

Keywords: anxiousness, cigarette smoking, extraversion, hot-not-burn products, neuroticism, psychoticism, tobacco behavior.

1 Introduction

In today´s time, smoking is quite a common phenomenon in the young adult population. In smoking, a habit is formed quickly, it is difficult to stop and the risk of nicotine addiction is increased. It is also important to consider alternative tobacco products, which are becoming increasingly more popular and frequently used. Among these, there are shisha, bidis, kretek, and smokeless products such as electronic cigarettes and IQOS. Tobacco behavior (tobaccoism) is characterized as maladaptive repeated application of products containing tobacco, creating an intensive habit. Researches (e.g., 1) confirms that the habit smoking creates is more intensive than is the case with alcohol, cocaine, or heroin. The most common form of tobacco use in the world is smoking cigarettes. Cigarettes represent 96% of all tobacco products in the world today (2). Among more modern alternatives, there are electronic cigarettes or e-cigarettes (transforming nicotine and other harmful compounds into a vapor inhaled by the consumer), and products that heat up tobacco leaves creating an inhalable aerosol instead of burning it, also known as heat-not-burn products, e.g., IQOS[1]. E-cigarettes are often signaled as an alternative to smoking or aid in breaking a tobacco habit, whereas the WHO has confirmed there are no studies proving the effectiveness of this nicotine alternative. On the contrary, new studies alert to the use of e-cigarettes in adolescence as possibly increasing the probability of the later use of cigarettes (3). Vansickel et al. (4) admit a certain significance to smokeless products which mitigate withdrawal symptoms while retaining a lower potential for use than cigarettes. Producers of heat-not-burn products present these as a safer alternative to cigarettes, but there is not sufficient information nor studies (5).

Alternative tobacco products (ATP) such as e-cigarettes, shisha, and smokeless tobacco are attractive to young individuals for various reasons. Some new products, like e-cigarettes, have become more accessible and can be used in places where smoking cigarettes is prohibited (6, 7, 8). Further, the aroma (9), the desire to try something new and some social situations can promote experimentation with ATPs. Some research (10, 8) suggests that a lot of young adults come to try ATPs through peer pressure if cigarettes are not available. Besides, it is more likely for young adults to use more than one tobacco product and e-cigarettes simultaneously (11, 12).

The use of tobacco products has a multifactorial background, where one of the significant factors is the individual's personality. The personality of smokers has been looked into by Eysenck et al. (13). Using his three-dimensional model, he explains that extraverts smoke to achieve stimulation and mitigate boredom by increasing cortical excitation, while individuals with a high degree of neuroticism or anxiousness smoke to lower their tension. Releasing tension is one of the crucial factors forming and maintaining various types of addictive behavior such as smoking or alcohol use but also gaming or even self-harm (14). Psychoticism is connected to aggressive and ruthless tendencies interconnected with the impulsivity subdomain as a trait characteristic for the use of addictive substances (15, 16). The relationship between psychoticism and smoking has likely got a social base. In individuals with high degrees of psychoticism, it was supposed that they smoke more than their counterparts with lower values, given the social strengthening of the negative stereotype connected to smoking. (17).

A plethora of research (18, 19, 20, 21, 22, 23, 13, etc.) aimed at personality traits has shown that smokers exhibit higher values of extraversion, neuroticism, psychoticism and anxiousness over non-smokers. In the meaning of a gender comparison in tobacco behavior, some research (24) found out more frequent tobacco behavior in males, others found no difference whatsoever (25). Other experts (26, 27) researched affective states in males and females as mental health factors. They came to the conclusion that impulsive behavior and the sensation seeking, characteristic for the personality dimension of extraversion, belonged to masculine markers. Feminine markers included anxiousness and depressivity, characteristic for the personality dimension of neuroticism, which may be linked to the more frequent affective smoking habits of women than men (e.g., 28). Considering that, it could be supposed that personality specifics will differ between male and female smokers. Many studies (18, 19, 29) confirm that smokers exhibit higher values of stress and anxiousness compared to non-smokers, whereas they smoke in an effort to mitigate stress and anxiousness. Based on the above, we considered it important to include in the subject matter of research, in addition to neuroticism, extraversion, and psychoticism, also the trait of anxiety. Within the comparative research the following goals were solved:

- Describe the occurrence of the forms of tobacco behavior in university students and find the differences between the male and female groups.
- Find the differences in personality characteristics (extraversion, neuroticism, psychoticism, anxiousness) between nicotine/tobacco users and non-smokers in the whole sample and separately for the male and female groups.
- Find the differences in personality characteristics (extraversion, neuroticism, psychoticism, anxiousness) between cigarette smokers and smokeless product users in the whole sample and separately for the male and female groups.
- Clear up the risk potential of personality factors and gender for tobacco behavior (using nicotine/tobacco products generally) and for smoking cigarettes in contrast with the use of smokeless products.

2 Methods

2.1 Research sample

In the research, the sample was chosen deliberately, oriented at a sample of smoking and non-smoking university students. The research sample included 202 adult respondents, of which 103

[1] IQOS is a globally used term signifying a device working on the heat-not-burn principle using tobacco leaves.

were smokers (51%) and 99 non-smokers (49%), 98 males (48.5%), and 104 females (51.5%), the participants were aged 19 to 27 with an average of 23.4 years old. The respondents were university students in various fields: security management (26%), economics (15%), psychology (14%), protection of people and property (12%), foreign languages (11%), pedagogy (9%), transport (8%) and others (5%). The individuals from the smoker group were further divided according to the form of tobacco product use. For the most part, they used cigarettes (n = 50; 48.5%), followed by IQOS (n = 36; 35.0%) and e-cigarettes (n = 17; 16.5%). We named the groups for further use as follows: Non-Smokers (no use of nicotine products), Smokers (use of any nicotine products). The Smokers group was further divided into Cigarette smoking (Cigarettes; n = 50) and Smokeless product using (Smokeless-Pro; n = 53).

2.2 Data collection methods

The research was carried out in November and December 2019 and January 2020. A quantitative method was applied. A pencil-and-paper anonymous questionnaire was administered, where the participants answered individual questions concerning personality dimensions and anxiousness. The first part of the questionnaire was aimed at demographic data, where Gender, Age, Field of Study, Smoking (Y/N), and Type of tobacco product (cigarettes, electronic cigarettes, IQOS) were detected. To find out the personality characteristics, a standardized Eysenck Personality Questionnaire Revised was used (Slovak version by Senka, Kováč, Matejík (29), of which three basic scales were handled in the study: Extraversion, Neuroticism, and Psychoticism. To measure anxiousness as a personality trait, a standardized STAI-X2 questionnaire (originally Spielberger et al., Slovak version by Müllner, Ruisel, Farkaš (30) was applied.

3 Results

In Tab. 1, the occurrence of the respondents exhibiting one of the forms of tobacco behavior and non-smokers is listed in males and females, as is the result of the statistical comparison. The differences between the groups are significant ($p < 0.001$), we see a higher count of non-smokers among females (58.6%, compared to 38.8% of males), higher counts of cigarette smoking in males (36.7%, compared to 13.5% of females). Smokeless products are used in 24.5% of males and 27.9% of females (of the entire sample). Overall, however, more male smokers smoke cigarettes while more female smokers use smokeless products.

Tab. 1: The occurrence of tobacco behavior forms and Non-smokers in groups of Males, Females and statistical testing of differences (Chi-Square test)

Group		Cigarettes	Smokeless-Pro	Non-smokers	Total sample
Males	Count	36	24	38	98
	Expected count	24.3	25.7	48.0	98
	%	**36.7%**	**24.5%**	38.8%	100.0%
Females	Count	14	29	61	104
	Expected count	25.7	27.3	51.0	104
	%	**13.5%**	**27.9%**	**58.6%**	100.0%
Chí-square			7.552		
			p < 0.01		
					15.330
					p < 0.001

In Tab. 2, the results of the personality trait comparison between smokers and non-smokers in the male and female subgroups as well as the entire sample, are listed. In the entire sample, there are significantly ($p < 0.05$) higher Extraversion and Psychoticism values in Smokers than Non-smokers. With regard to gender, significantly higher Extraversion ($p \leq 0.001$) and lower Anxiousness ($p < 0.05$) is observed among female Smokers than female Non-smokers. Significantly higher Neuroticism ($p < 0.05$) is observed among male Smokers than Non-smokers and higher Psychoticism ($p < 0.05$) in Smokers than Non-smokers of both genders.

Tab. 2: The results of statistical testing the differences in personality traits between groups of Smokers, Non-smokers in the total sample and gender groups (Mann-Whitney`s U test)

Group			Smokers	Non-Smokers	Mann-Whitney`s U test p-value
Males	E	AM (SD)	13.6 (4.8)	12.3 (6.2)	p > 0.05
		I-Q Range	9.5 - 17	8 - 18.5	
	N	AM (SD)	**11.7** (5.0)	8.7 (6.3)	**p < 0.05**
		I-Q Range	8 - 15	2 - 14	
	P	AM (SD)	**10.7** (3.4)	9.0 (4.0)	**p < 0.05**
		I-Q Range	8 - 13	1 - 15	
	A	AM (SD)	41.8 (8.8)	40.5 (9.6)	p > 0.05
		I-Q Range	37 - 47	34 - 47	
Females	E	AM (SD)	**15.2** (4.2)	12.1 (5.1)	**p ≤ 0.001**
		I-Q Range	13 - 18	8 - 15.5	
	N	AM (SD)	13.7 (4.3)	14.3 (5.0)	p > 0.05
		I-Q Range	12.5 - 17	11 - 18	
	P	AM (SD)	**9.7** (4.4)	7.1 (2.6)	**p < 0.01**
		I-Q Range	5.5 - 13	5.5 - 9	
	A	AM (SD)	42.4 (6.3)	**46.4** (7.9)	**p < 0.05**
		I-Q Range	37.5 - 48	40 - 52.5	
Total sample	E	AM (SD)	**14.3 (4.6)**	12.1 (5.5)	**p < 0.05**
		I-Q Range	11 - 18	8 - 17	
	N	AM (SD)	12.5 (4.8)	12.1 (6.1)	p > 0.05
		I-Q Range	9 – 16	7 - 16	
	P	AM (SD)	**10.3 (3.8)**	7.8 (3.3)	**p < 0.01**
		I-Q Range	8 - 13	6 - 9	
	A	AM (SD)	42.0 (7.9)	44.1 (9.0)	p > 0.05
		I-Q Range	37 - 47	38 - 50	

Note: I-Q Range – interquartile range; E – Extraversion; N – Neuroticism; P – Psychoticism; A – Anxiousness

When comparing groups of users with regard to the form of tobacco behavior in the entire sample (Tab. 3) there were no significant differences found in personality traits ($p > 0.05$). When including gender, significantly higher Neuroticism in males using Smokeless products compared to males using Cigarettes ($p < 0.05$) were observed. In females, there were no significant differences found with regard to form of use.

Considering the last goal, the personality traits and gender were examined as predictors of smoking, as well as the predictors of the smokeless products using when compared to cigarettes using. As is visible in Tab. 4, gender, as well as Extraversion and Psychoticism, are significant predictors of smoking ($p < 0.05$), where the male gender increases the chance of the occurrence of smoking 1.904 times over females. With increasing Extraversion and Psychoticism, the chances of the occurrence of Smoking increase ($Exp(B) > 1$). In the other model, with Cigarette smoking as a dependent variable, the personality factors Extraversion and Psychoticism were not shown to be significant ($p > 0.05$). The chance of smoking Cigarettes is 3.020 times higher for males ($p < 0.05$).

Tab. 3: The results of statistical testing the differences in personality traits between groups of Cigarettes users, Smokeless products users in the total sample, and gender groups (Mann-Whitney`s U test)

Group			Cigarettes	Smokeless-Pro	Mann-Whitney`s U test p-value
Males	E	AM (SD)	14.2 (5.3)	13.5 (4.2)	p > 0.05
		I-Q Range	12 - 18	9 - 17	
	N	AM (SD)	11.1 (4.9)	**13.7 (5.1)**	**p < 0.05**
		I-Q Range	6.5 - 15	12 - 19	
	P	AM (SD)	11.0 (3.2)	10.5 (3.4)	p > 0.05
		I-Q Range	8 - 13	8.5 - 13	
	A	AM (SD)	41.5 (8.4)	43.9 (9.5)	p > 0.05
		I-Q Range	37 - 47	39 - 50.5	
Females	E	AM (SD)	14.7 (4.8)	15.3 (4.0)	p > 0.05
		I-Q Range	9.5 - 18.5	13 - 18	
	N	AM (SD)	14.9 (3.8)	13.1 (4.3)	p > 0.05
		I-Q Range	13 - 18	9.5 - 16.5	
	P	AM (SD)	10.9 (4.1)	9.6 (4.7)	p > 0.05

		I-Q Range	8 - 14	5.5 - 13	
	A	AM (SD)	43.6 (6.5)	41.8 (6.3)	p > 0.05
		I-Q Range	38.4 - 49	38 - 48	
Total sample	E	AM (SD)	14.3(5.1)	14.5 (4.1)	p > 0.05
		I-Q Range	12 - 18	13 - 18	
	N	AM (SD)	12.2 (4.9)	13.4 (4.6)	p > 0.05
		I-Q Range	9 - 16	12 - 17	
	P	AM (SD)	11.0 (3.4)	10.2 (4.2)	p > 0.05
		I-Q Range	8 - 13	8 - 13	
	A	AM (SD)	42.1 (8.1)	42.8 (7.9)	p > 0.05
		I-Q Range	37 - 47	39 - 48	

Note: I-Q Range – interquartile range; E – Extraversion; N – Neuroticism; P – Psychoticism; A – Anxiousness

Tab. 4: The results of Binary Logistic Regression analysis for dependent variable: A. Smokers, B. Smokeless products use; and predictors: Gender, Extraversion, Psychoticism

		Predictors		Chí-square
		p-value	Exp(B)	p-value R^{2a}
A. Smokers[c]	Gender[b]	**p < 0.05**	1.904	33.355
	Extraversion	**p < 0.05**	1.076	**p < 0.001**
	Psychoticism	**p < 0.001**	1.170	0.144 - 0.192
B. Cigarette smoking[d]	Gender[b]	**p < 0.01**	3.020	8.160
	Extraversion	p > 0.05	1.002	**p < 0.05**
	Psychoticism	p > 0.05	1.039	0.076 - 0.102

Note: [a] – Cox & Snell R^2 – Nagelkerke R^2; [b] – Female is a reference category; [c] – the Odds Ratio is interpreted in comparison to Non-smokers; [d] – the Odds Ratio is interpreted in comparison to Smokeless product using

4 Discussion

The use of legal drugs is among the most frequent forms of risk behavior. After alcohol, nicotine is the second most used drug, despite obvious health and social risks. Tobacco (nicotine) products are legalized for sale and use in Slovakia, for persons over 18 years of age. It is common, despite this, that individuals start smoking during adolescence, which increases not only the risk of addiction but also of other adverse consequences to the health of young individual, such as, for example, somatic symptoms (31). Further, smoking and other drug use are associated with antisocial or risky sexual behavior during adolescence (32). These same health risks are what people come to think about once they stop smoking, or seek out products with an alleged lower impact on their health, at a later stage. Concerning this, and to some interventions of the state such as higher prices and the obligation for manufacturers to display images of the consequences of smoking on their products and so on, there is a slightly decreasing trend in the prevalence of use according to the Public Health Authority of the Slovak Republic (33). This trend has inspired tobacco manufacturers to produce alternative nicotine-containing products. In Slovakia, they have only become widespread in the last few years, with the first articles and studies dealing therewith appearing about 2015-2016 (e.g., 34). These are mainly e-cigarettes and heat-not-burn products. While these are by far not new to the country anymore, up until now none of the tobacco behavior studies that have been carried out have differentiated these forms of use from cigarette smoking. The determinants of choice among these products or their use in individuals have also not been investigated. Hence why, in our study, we have targeted not only the exploration of differences among, plainly said, smokers and non-smokers, but we also differentiated among smokers and the users of smokeless products. Within the first goal of the study, a higher number of smokers was found among males in comparison to females. In the smoker subgroup, there was a higher occurrence of females using smokeless products (67.4% of female smokers) than males (40% of male smokers). The ratio of smokers to non-smokers was intentionally equalized, which is why it does decidedly not represent the population. The sample was not, however, equalized deliberately in terms of gender nor form of use, thus, the gender differences can be considered valid. The prevalence of tobacco behavior in males can be considered a constant, unchanging fact in Slovakia (33) and across the world (35, 36, 37). For a ratio comparison of cigarette smoking and the use of smokeless products, there is little data in Slovakia. Foreign studies show a prevalence of e-cigarette and heat-not-burn product users in males and females of the entire population, but not regarding cigarette smoking. Only in adolescents (13-15 years of age) in a WHO study (ibid), where the use of tobacco products was found to have an equal ratio among both genders, was the evidence of the occurrence of smokeless product use significantly more frequently in males, whereas it represented 11.7% of the whole population. In our study, an equal ratio of smoking and smokeless product use was found (50:50), while smokeless products were used more by females than males. The inverse results in university students can be explained by the 5-year gap on the one hand, and on the other hand, more likely, through the accessibility of smokeless products and a higher degree of self-care and concern for one´s own health in females, given that smokeless products are considered to be less harmful to the user´s health as well as to their surroundings. The preference for smokeless products in females can also relate to the design, the use of these being more attractive and looking more appealing, while not accompanied by unpleasant smells.

While comparing personality traits in smokers and non-smokers we interpret a higher degree of psychoticism and extraversion in smokers regardless of gender. When we include gender, we characterize female smokers (apart from the two aforementioned traits) as showing lower levels of anxiousness. On the contrary, male smokers exhibit a more neurotic, psychotic personality, but do not differ from non-smokers in extraversion. In the next comparison of personality traits among the groups according to form of use, there was only one significant difference found, in the neuroticism trait in males. Smokeless products using males show a higher degree of neuroticism when compared to cigarette smokers. There were no other significant differences found between the groups in females nor the entire sample.

The results are only partly in accordance with the starting points. The findings on psychoticism and extraversion are in accordance (27, 38, 39, 40, 41, 17, 42), while a higher degree of psychoticism as a base characteristic connected with addictive behavior appears in both the male and female subgroups. Extraversion is a significant factor for smoking in females, where there can be rituals connected with smoking as a means of socialization, to establish social contact, which can finally be connected to smoking under the influence of a group. On the contrary, in men, a higher degree of neuroticism is accentuated, marked by a higher tendency for an unstable experience in general, which shows an internal motive to smoking as a means to reduce tension or stress. Concerning neuroticism, we follow with the interpretation of the results regarding anxiousness, which (as a construct) is narrowly related to neuroticism. Many experts (18, 19, etc.) consider higher degrees of anxiousness as a trait of smokers (as compared to smokers), where others (e.g., 43) do not consider it a significant predictor of smoking. Our results suggest that the gender aspect likely plays a role here. Females, with their higher overall tendency to worry (about themselves and others), be concerned and be under stress (the perception of risk and threat), are more likely to be non-smokers, whereas males with their higher overall emotional instability (without the accent of higher degrees of anxiousness) are more likely to be smokers. These findings are peculiar considering the fact that neuroticism and anxiousness are related traits. It appears that anxiousness in women is more of a protective trait, in that it supports the realization of the risks of smoking and protects the individual from exposing herself to the risk (by stopping or never starting smoking). This differentiates them from males, wherein neuroticism increases the risk of smoking. Less emotionally stable men use smoking as a coping strategy to reduce a negative experience or stabilize an unstable one. A negative or unstable experience, however, does not have to be connected to worry or stress (as it is with neuroticism), but also with, for example, intensive emotional experience or tension, where the individual does not take risks into account. In males with a higher degree of neuroticism, then, there is a motive of escape from an unpleasant, unstable experience, which can be a trigger for the occurrence of nicotine addiction. (e.g., 44). On the other hand, the only difference between the smoking and

smokeless product using group in the entire sample as well as the male and female subgroups was in neuroticism in males. Males who use smokeless products have higher degrees of neuroticism than males who smoke cigarettes. Unlike the anxiousness observed in females as a protective factor in starting smoking, in males that already smoke, higher neuroticism can be a mediator between perceiving the risks of smoking and seeking (allegedly) less harmful alternatives.

To conclude we tested gender, psychoticism, and extraversion as predictors in regression models. After verifying the influence of the predictors on the occurrence of smoking (compared to non-smokers) we state that all three predictors hold significance while increasing psychoticism, extraversion and male gender are risk factors with a medium joint effect on smoking (15-20% explained). In the second regression model, where the occurrence of cigarette smoking was examined with reference to the use of smokeless products, the male gender was confirmed as increasing the chance of cigarette smoking threefold in comparison with females, who use smokeless products more frequently. Neither psychoticism nor extraversion is related to the choice of using smokeless products or cigarettes.

5 Conclusions

The identification of the risk structure of the personality consisting of a higher degree of extraversion and psychoticism in smokers can be useful in preventive or interventive strategies, with individuals who are trying to quit smoking, with an aim of reducing group influence and the need to socialize through smoker rituals. The higher degree of neuroticism as a risk factor for smoking in males and the higher degree of anxiousness as a protective factor in females are new findings. In the same vein, males use cigarettes more than smokeless products in comparison with women. With regard to the above, the highest-risk group is that of emotionally unstable males with a higher degree of psychoticism, wherein preventive activities targeted at the development of coping strategies, self-control, or the deflection of tension into other activities (e.g., sports) could be effective. Females, if they smoke, are more extraverted, less anxious, and with a higher degree of psychoticism, though even in this personality profile they prefer smokeless products, which points to either a higher awareness of the consequences on their health or aesthetic aspects. Effective prevention or intervention could be targeted at increasing awareness of the risks of smoking or the benefits of not smoking. The investigation of the complete spectrum of personality traits that predispose an individual for tobacco behavior would require research wider in scope, such as including the motives for tobacco behavior, which could improve the understanding of the mechanism that finally activates the risk traits into behavior.

Literature:

1. Rovný, I. et al.: Vybrané kapitoly verejného zdravotníctva I. Banská Bystrica: PRO Banská Bystrica, 2011.
2. Baška, T.: Prevencia užívania tabaku u školskej mládeže. Martin: Národná koalícia pre kontrolu tabaku v SR, Jesseniova LF, 2008.
3. Hair, E. et al: Association between e-cigarette use and future combustible cigarette use: Evidence from a prospective cohort of youth and young adults, 2017–2019. Addictive Behaviors. 2021; 112: 1-6.
4. Vansickel, A. R., Weaver, M. F., Eissenberg, T.: Clinical laboratory assessment of the abuse liability of an electronic cigarette. Addiction. 2012; 107(8): 1493-1500. Available from: doi: 10.1111/j.1360-0443.2012.03791.x
5. Truth Initiative: 6 Important things to know about IQOS, the new heated cigarette product: the research report. Washington, DC: Truth Initiative, 2019. Available from: https://truthinitiative.org/research-resources/emerging-tobacco-products/6-important-things-know-about-iqos-new-heated [Accessed 13th May 2021].
6. Czoli, Ch. D., Hammond, D., White, Ch. M.: Electronic cigarettes in Canada: prevalence of use and perceptions among youth and young adults. Canadian Journal of Public Health. 2014; 105: 97-102. Available from: doi: 10.17269/cjph.105.4119
7. Choi, K. et al.: Young adults' favorable perceptions of snus, dissolvable tobacco products, and electronic cigarettes: Findings from a focus group study. American Journal of Public Health. 2012; 102(11): 2088-2093. Available from: doi: 10.2105/AJPH.2011.300525
8. Wray, R. J. et al.: Young adults' perceptions about established and emerging tobacco products: results from eight focus groups. Nicotine & Tobacco Research. 2012; 14(2): 184-190 Available from: doi: 10.1093/ntr/ntr168
9. Reid, J. L. et al.: Tobacco Use in Canada: Patterns and Trends, 2019 Edition. Waterloo, Ontario: Propel Centre for Population Health Impact, University of Waterloo: 2017. 118 p. Available from: https://uwaterloo.ca/tobacco-use-canada/tobacco-use-canada-patterns-and-trends [Accessed 13th May 2021].
10. Hammal, F. et al.: Waterpipe (hookah) smoking among youth and women in Canada is new, not traditional. Nicotine & Tobacco Research. 2016; 18(5): 757-762. Available from: doi: 10.1093/ntr/ntv152
11. Dutra, L. M., Glanz, S. A.: Electronic cigarettes and conventional cigarette use among US adolescents: a cross-sectional study. JAMA Pediatrics. 2014; 168(7): 610-617. Available from: doi: 10.1001/jamapediatrics.2013.5488
12. Cooper, M., Case, K. R., Loukas, A.: E-cigarette use among Texas youth: results from the 2014 Texas Youth Tobacco Survey. Addictive Behaviors. 2015; 50: 173-177. Available from: doi: 10.1016/j.addbeh.2015.06.034
13. Eysenck, H. J.: The biological bases of personality. The British Journal of Psychiatry. 1967; 116(530): 1-103. Available from: doi: 10.1192/bjp.116.530.103
14. Demuthova, S., Vaclavikova, I., Selecka, L., Blatny, M.: The problem of self-disclosure of self-harming behaviour in adolescence. Postmodern Openings. 2020; 11(4): 1-19. Available from: doi: 10.18662/po/11.4/220
15. Eysenck, H. J.: Psychophysiology and personality: Extraversion, neuroticism and psychoticism. In: Gale, A., Edwards, J. A. (eds.) Physiological correlates of human behaviour, Volume 3: Individual Differences and Psychopathology. London: Academic Press: 1983. p 13-30. Available from: doi: 10.1016/B978-0-12-273903-3.50007-9
16. Acton, S. G.: Measurement of impulsivity in a hierarchical model of personality traits: implications for substance use. Substance Use Misuse. 2003; 38(1): 67-83. Available from: doi: 10.1081/ja-120016566
17. Patton, D., Barnes, G. E., Murray, R. P.: A personality typology of smokers. Addictive Behaviors. 1997; 22(2): 269-273. Available from: doi: 10.1016/S0306-4603(96)00004-4
18. Cougle, J. R. et al.: The role of comorbidity in explaining the associations between anxiety disorders and smoking. Nicotine & Tobacco Research. 2010; 12(4): 355-364. Available from: doi: 10.1093/ntr/ntq006
19. Lawrence, D. et al.: Anxiety disorders and cigarette smoking: Results from the Australian Survey of Mental Health and Wellbeing. Australian and New Zealand Journal of Psychiatry. 2010; 44(6): 520-527. Available from: doi: 10.3109/00048670903571580
20. Spielberger, Ch. D. et al.: Personality determinants of the use of tobacco products. Personality and Individual Differences. 2004; 36(5): 1073-1082. Available from: doi: 10.1016/S0191-8869(03)00201-0
21. Crawford, A. M. et al.: Parallel developmental trajectories of sensation seeking and regular substance use in adolescents. Psychology of Addictive Behaviors. 2003; 17(3): 179-192. Available from: doi: 10.1037/0893-164X.17.3.179
22. Byrne, D., Byrne, A. E., Reinhart, M. I.: Personality, stress and the decision to commence cigarette smoking in adolescence. Journal of Psychosomatic Research. 1995; 39(1): 53-62. Available from: doi: 10.1016/0022-3999(94)00074-F
23. Gilbert, D. G.: Introversion and self-reported reason for and time of urge for smoking. Addictive Behaviors. 1980;5(2): 97-99. Available from: doi: 7405664
24. Gavurová, B., Korony, S., Barták, M.: The Effects of Socio-economic Determinants on the Prevalence of Tobacco Smoking among Full-time Slovak University Students. Adiktologie. 2018; 18(1): 16-27.

25. Chinwong, D., et al.: A Comparison of Gender Differences in Smoking Behaviors, Intention to Quit, and Nicotine Dependence among Thai University Students. Hindawi Journal of Addiction. 2018; 2018: 1-8. Available from: doi: 10.1155/2018/8081670
26. Barrett, A. E., White, H. R.: Trajectories of Gender Role Orientations in Adolescence and Early Adulthood: A Prospective Study of the Mental Health Effects of Masculinity and Femininity. Journal of Health and Social Behavior. 2002; 43(4): 451-468. Available from: doi: 10.2307/3090237
27. Cross, C. P., Copping, L. T., Campbell, A.: Sex differences in impulsivity: A meta-analysis. Psychological Bulletin. 2011; 137(1): 97-130. Available from: doi: 10.1037/a0021591
28. Stoltenberg, S. F., Batien, B. D., Birgenheir, D. G.: Does gender moderate associations among impulsivity and health-risk behaviors? Addictive Behaviors. 2008; 33(2): 252-265. Available from: doi: 10.1016/j.addbeh.2007.09.004
29. Heretik, A. et al.: 10 rokov epidemiologického výskumu psychických porúch na Slovensku (štúdie EPIx). Psychiatria – Psychoterapia – Psychosomatika. 2013; 20(3): 25-28.
29. Senka, J., Kováč, T., Matejík, M.: Eysenckove osobnostné dotazníky pre dospelých. Bratislava: Psychodiagnostika: 1993. 76 p.
30. Műllner, J., Ruisel, I., Farkaš, G.: Príručka pre administráciu, interpretáciu a vyhodnocovanie dotazníka na meranie úzkosti a úzkostlivosti. Bratislava: Psychoiagnostické a didaktické testy: 1980. 94 p.
31. Mičková, Z.: Vzťah rodinných faktorov, alkoholového správania, fajčenia a symptomatológie somatických problémov adolescentov. In: Piterová, I., Výrost, J. (eds) Sociálne procesy a osobnosť 2018: proceedings. Košice: Institute of Social Sciences CSPS SAS; 2019. p. 216-224.
32. Selecká, L., Václaviková, I., Blatný, M., Hrdlička, M.: Typológia antisociálneho správania: špecifiká prejavov adolescentných chlapcov a dievčat vo vzťahu k rizikovému sexuálnemu správaniu. Česká a slovenská psychiatrie. 2017; 113(6): 258-267.
33. Public Health Authority of the Slovak Republic: Vývoj fajčenia v Slovenskej republike. 2020. Available from: https://www.uvzsr.sk/index.php?option=com_content&view=article&id=4557:vyvoj-fajenia-vnslovenskej-republike&catid=106:aktualne&Itemid=1&fbclid=IwAR1dHflcszsrPuuJENHmJCN0HfTt_ckDuZh-2f6Ir6g39iw86gTHfBOlcWA [Accessed 13th May 2021].
34. Grohol, M.: Elektronické cigarety a vaping. Alkoholizmus a drogové závislosti (Protialkoholický obzor). 2016; 51(3): 113-145.
35. Who, Global Youth Tobacco Survey: Slovakia 2016 country report: the research report. Geneva: World Health Organization: 2016. 41 p. Available from: https://www.who.int/tobacco/surveillance/survey/gyts/country_reports/euro/en/ [Accessed 13th May 2021].
36. Forrester, K. et al.: Predictors of smoking onset over two years. Nicotine & Tobacco Research. 2007; 9(12): 1259-1267. Available from: doi: 110.1080/14622200701705357
37. Nguyen, T. T. et al.: Smoking susceptibility and attitudes toward smoking among Chinese and Vietnamese American adolescents. Journal of Ethnicity in Substance Abuse. 2008; 6(3-4): 167-181. Available from: doi: 10.1300/J233v06n03_08
38. Schmitt, D. P. et al.: Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures. Journal of Personality and Social Psychology. 2008; 94(1): 168-182. Available from: doi: 10.1037/0022-3514.94.1.168
39. Joseph, S. et al.: Personality, smoking motivation, and self-efficacy to quit. Personality and Individual differences. 2003; 34(5): 749-758. Available from: doi: 10.1016/S0191-8869(02)00068-5
40. Vollrath, M., Torgersen, S.: Who takes health risks? A probe into eight personality types. Personality and Individual Differences. 2002; 32(7): 1185-1197. Available from: doi: 10.1016/S0191-8869(01)00080-0
41. Lopez, A. Gutiérez-Maldonado, J., Andres-Pueyo, A.: Smoking and schizotopy. Psicothema. 2001; 13(1): 648-649. Available from: http://www.psicothema.com/english/imprimir.asp?id=415 [Accessed 13th May 2021].
42. Rae, G.: Extraversion, neuroticism and cigarette smoking. British Journal of Social & Clinical Psychology. 1975; 14(4): 429-430. Available from: doi: 10.1111/j.2044-8260.1975.tb00201.x
43. Krank, M. et al.: Structural, concurrent, and predictive validity of the Substance Use Risk Profile Scale in early adolescence. Addictive Behaviors. 2011; 36(1-2): 37-46. Available from: doi: 10.1016/j.addbeh.2010.08.010
44. Hwang, J., Yun, Z. S.: Mechanism of psychological distress-driven smoking addiction behavior. Journal of Business Research. 2015; 68(10): 2189-2197. Available from: doi: 10.1016/j.jbusres.2015.03.019

Primary Paper Section: A

Secondary Paper Section: AN