

# The relationship between women's personality traits and addiction to social networking sites on the example of Facebook

K. RACHUBIŃSKA<sup>1</sup>, A.M. CYBULSKA<sup>1</sup>, J. OWSIANOWSKA<sup>2</sup>, M. ŚNIEGOCKA<sup>3</sup>, L. ZAIR<sup>4</sup>, E. GROCHANS<sup>1</sup>

<sup>1</sup>Department of Nursing, Faculty of Health Sciences, Pomeranian Medical University in Szczecin, Szczecin, Poland

<sup>2</sup>Department of Specialized Nursing, Faculty of Health Sciences, Pomeranian Medical University in Szczecin, Poland

<sup>3</sup>Department of Nursing, Faculty of Rehabilitation, Józef Piłsudski University of Physical Education in Warsaw, Marynoka, Warsaw, Poland

<sup>4</sup>Department of General Surgery and Transplantation, Pomeranian Medical University in Szczecin, Szczecin, Poland

**Abstract.** – **OBJECTIVE:** The purpose of this study was to generally assess the degree of women's dependence on social networking sites on the example of Facebook, taking into account personality traits according to the five-factor model of personality, the so-called Big Five.

**PATIENTS AND METHODS:** The study included 556 women. This survey-based study was carried out using the questionnaire technique. The following research tools were used to analyze behavioral addictions in adult women: the Bergen Facebook Addiction Scale (BFAS), the NEO Five-Factor Inventory (NEO FFI) and the author's questionnaire.

**RESULTS:** Among the surveyed women, 69.6% were average Facebook users, of whom 16.4% had scores indicating possible Facebook addiction, and 14.0% had scores indicating addiction. The higher the neuroticism, the more serious the Facebook addiction. A weak negative correlation was obtained for the agreeableness subscale. A weak negative correlation was also obtained for the subscale of conscientiousness. There was no statistically significant correlation between the log<sub>10</sub> score obtained on the BFAS and the score on the NEO-FFI subscales of extraversion and openness to experience.

**CONCLUSIONS:** The personality types of the studied women indicated relationships in terms of behavioral addictions. Women characterized by neuroticism showed stronger addiction to Facebook. Women characterized by high conscientiousness were at lower risk of behavioral addictions, while agreeableness as a personality trait significantly protected the surveyed women against Facebook addiction.

*Key Words:*

Behavioral addiction, Facebook addiction, Women.

## Introduction

Behavioral addictions to the so-called 'new media', and in particular to social networking sites (SNSs), are becoming an increasingly serious problem among societies. The users are of all ages and their number is increasing every year. The exact causes of addictions are still not fully understood. In the case of Facebook addiction, the importance of personality traits and behaviors that may predispose to addiction – such as depressive disorders, anxiety, hostile behavior, aggression, impulsivity and psychotic behavior, shyness, self-esteem disorders, and dissocial personality traits – are emphasized<sup>1,2</sup>.

Personality predispositions are an important element in behavioral addictions. Costa and McCrae<sup>3</sup>, authors of the Five-Factor Theory of Personality, propose that there are three central components to personality: basic tendencies, characteristic adaptations, and self-concept. Basic tendencies, the so-called Big Five, comprise five personality factors: neuroticism, extraversion, openness to experience, conscientiousness, and agreeableness<sup>2,3</sup>.

The first trait belonging to the five-factor model of personality, neuroticism, reflects emotional stability and a person's tendency to experience mental distress. Extraversion reflects the tendency to be outgoing and experience positive emotions. The third factor, openness to experience, represents an individual's intellectual curiosity and willingness to consider alternative approaches. Agreeableness is another aspect of interpersonal behavior, reflecting trust, empathy,

and the ability to cooperate. The fifth dimension, conscientiousness, reflects the degree of being organized, diligence and scrupulousness of an individual<sup>4,5</sup>.

Social network addicts may differ significantly from non-addicts in terms of personality traits, such as agreeableness, neuroticism and conscientiousness. Addicts may be prone to negative emotions and unpleasant experiences, which may be associated with a higher level of neuroticism. Lower conscientiousness in addicts means less motivation to act and achieve their goals. Addicts often fail to cope in the real world, often experience negative emotions, quickly give up their goals, see themselves and others in a negative light, and escape into virtual reality. Virtual reality gives the illusion of security and anonymity. The virtual world is devoid of the anxiety that an individual faces in real life interactions, hence the tendency for addiction among people with higher levels of neuroticism. Internet addiction has not yet been officially recognized as a clinical diagnosis<sup>4,5</sup>.

The causes of addictions are not fully understood. The primary cause of addiction may be innate temperamental traits (i.e., impulsiveness of behavior and impulsiveness of decisions) that influence the susceptibility to functional and chemical addictions. According to the concept of addictive personality, people who have this problem are prone to addiction as such, regardless of what they are addicted to. There are relatively few studies on behavioral addictions among women, especially in the context of personality traits<sup>6</sup>. Therefore, the purpose of this study was to generally assess the degree of women's dependence on social networking sites on the example of Facebook, taking into account personality traits according to the five-factor model of personality, the so-called Big Five by Costa and McCrae<sup>3</sup>.

## Patients and Methods

The study included 556 women at the mean age of 34 years who met the following inclusion criteria: female sex, age > 18 years, place of residence in the West Pomeranian Voivodeship, informed written consent to participate in the study, and completion of the provided set of questionnaires. The results were obtained as part of a larger investigation to analyze the influence of a wide array of social and psychological factors on behavior addictions among women. The research

was conducted in accordance with the Declaration of Helsinki. The respondents received written information about the purpose and course of the study, as well as the possibility to withdraw from the study at any stage. Before starting the project, approval was obtained from the Bioethics Committee of the Pomeranian Medical University in Szczecin (KB-0012/518/12/16).

This survey-based study was carried out using the questionnaire technique. The following research tools were used to analyze behavioral addictions in adult women.

### ***The Bergen Facebook Addiction Scale (BFAS)***

A standardized research tool, developed by T. Torsheim, GS. Brunborg and S. Pallesen from the Department of Psychosocial Sciences at the University of Bergen to measure Facebook addiction. It is currently the only Facebook addiction research tool with proven psychometric properties. The tool consists of eighteen items reflecting the six core elements of addiction, three items for each, namely: salience, mood modification, tolerance, withdrawal, conflict, and relapse.

Each item is rated on a 5-point scale. The items have the form of questions – each of them concerns the behavior related to using Facebook during the last year. The higher the final score, the more severe the Facebook addiction. The BFAS can be used in clinical settings. The internal consistency of the scale was measured using Cronbach's  $\alpha$  method and was 0.82. The accuracy of the tool was confirmed by correlations with the Addictive Tendencies Scale ( $r = 0.69$ ;  $p < 0.01$ ) and the Facebook Attitudes Scale ( $r = 0.58$ ;  $p < 0.01$ ). The Polish adaptation of the BFAS was made by Edyta Charzyńska and Jolanta Gózdź from the Faculty of Psychology at the University of Silesia<sup>7,8</sup>.

### ***The NEO Five-Factor Inventory (NEO FFI)***

A standardized questionnaire used to diagnose personality traits included in the popular five-factor model, known as the Big Five model by Costa and McCrae<sup>3</sup>. This tool consists of 60 self-report statements rated by the respondent on a five-point scale. Each item is a statement that requires the respondent to mark the answer on a 5-point Likert Scale. These items form five scales measuring: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness – the Big Five. The above-mentioned five

dimensions of personality also constitute a set of the so-called components, or sub-traits. On this basis, it is possible to explain and predict with a high degree of probability, a person's behavior, reactions, and the way a given person experiences various situations, as well as how he/she is perceived by others<sup>3</sup>.

The score for each of the NEO-FFI subscales is calculated by summing up the points obtained by the respondent. Each response can be scored from 0 to 4 points. In some items the direction of scoring is reversed. Each scale contains 12 items, therefore the raw score ranges from 0 to 48 points. A higher score on a given scale indicates a greater intensity of a given trait. After calculating raw scores, they should be converted into normalized results, i.e., sten scores, using ready-made norm tables<sup>1,2</sup>.

### The Author's Questionnaire

The author's questionnaire contained closed and semi-open questions, whose aim was to obtain selected sociodemographic data of the respondents, i.e., age, education, marital status, place of residence, and employment status.

## Results

A total of 556 women aged  $34 \pm 15$  years (Median = 27 years, lower/upper quartile = 22.0/45.0 years) were examined. Among the surveyed women, 269 (48.4%) had higher education, 263 (47.3%) lived in a city with more than 100,000 inhabitants, 370 (66.5%) were married / in a partner relationship, 496 (89.2%) were employed.

The mean score obtained by the respondents on the Facebook Addiction Scale was  $9.5 \pm 4.2$ , with a maximum possible score of 30.

Among the surveyed women, 387 (69.6%) were average Facebook users, of whom 91 (16.4%) had scores indicating possible Facebook addiction,

and 78 (14.0%) had scores indicating addiction. The largest group of women (56.1%) scored between 4 and 7 on the Facebook Addiction Scale (BFAS), and the smallest group (3.1%) scored between 20 and 24.

The data obtained from the NEO-FFI Personality Inventory showed that the strongest mean trait intensity was found in the subscale of conscientiousness ( $33.3 \pm 7.2$ ), followed by agreeableness ( $30.3 \pm 6.2$ ), and then, extraversion ( $29.1 \pm 6.9$ ). The lowest intensity was found in the subscale of neuroticism ( $22.3 \pm 9.3$ ) (Table I).

The analysis of the intensity of particular traits showed that the largest group (15.6%) in the subscale of neuroticism were women who obtained the average sten score of 5. A similar number (15.1%) obtained a sten score of 7 (higher intensity) and a sten score of 4 (lower intensity). 14.4% of the respondents had the average sten score of 6. In the case of extraversion, the largest group of women (17.8%) obtained the average sten score of 7, while 16% and 15.8% of the respondents had lower sten scores of 6 and 5, respectively. In the subscale of openness to experience, the largest number of the respondents (20.9%) obtained an average sten score of 5, and 16.4% had lower sten scores of 4 and 6. In the case of agreeableness, the largest group was 18.5% of the respondents, in whom the average intensity of this trait was at the level of a sten score of 5, while 16.9%, 14.4%, and 13.7% of the respondents obtained higher sten scores of 6, 7, and 8, respectively. Most of the respondents (20.3%) in the conscientiousness subscale had a mean sten score of 6, while 17.6% and 14% of the respondents had higher sten scores of 7 and 8, respectively.

Analysis of the relationships between personality traits according to the NEO-FFI and Facebook addiction according to the BFAS showed a statistically significant a positive, weak correlation ( $r = 0.26$ ;  $p < 0.001$ ;  $R^2 = 6.7\%$ ) between score obtained on the BFAS and the score obtained on

**Table I.** Descriptive characteristics of psychological variables in the study sample.

Personality according to the NEO-FFI	M	-95% CI	+95% CI	Me	Min-Max	Q <sub>1</sub> -Q <sub>3</sub>	Sd
Neuroticism	22.3	21.5	23.1	21	1-48	15-28	9.3
Extraversion	29.1	28.5	29.7	29	8-48	24-34	6.9
Openness to experience	27.2	26.7	27.8	26	6-47	23-31	6.1
Agreeableness	30.3	29.8	30.9	30	8-48	27-34	6.2
Conscientiousness	33.3	32.7	33.9	34	4-48	29-38	7.2

M: mean, CI: confidence interval, Me: median, Q<sub>1</sub>: lower quartile, Q<sub>3</sub>: upper quartile, Sd: standard deviation.

the NEO-FFI neuroticism subscale. The higher the neuroticism, the more serious the Facebook addiction (Figure 1).

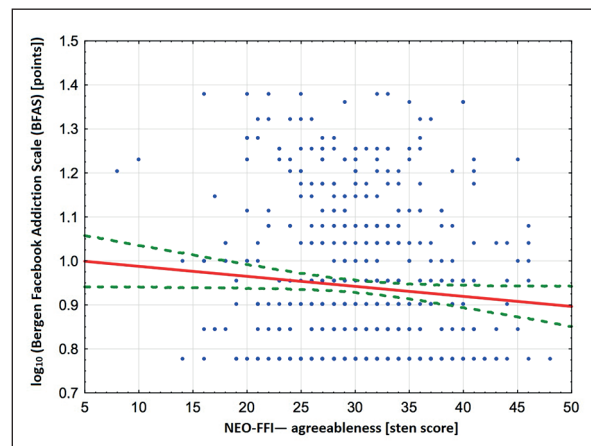
A weak negative correlation was obtained for the agreeableness subscale ( $r = -0.08$ ;  $p < 0.05$ ;  $R^2 = 7.2\%$ ) (Figure 2). A weak negative correlation was also obtained for the subscale of conscientiousness ( $r = -0.16$ ;  $p < 0.001$ ;  $R^2 = 2.6\%$ ) (Figure 3).

There was no statistically significant correlation between the log10 score obtained on the BFAS and the score on the NEO-FFI subscales of extraversion ( $r = 0.04$ ;  $p = 0.40$ ) and openness to experience ( $r = 0.04$ ;  $p = 0.30$ ).

## Discussion

Personality predispositions are an important element in addiction to social networks. The focus was on the five-factor model of personality in which the assessment of personality is based on the dimensions of extraversion (e.g., being extraverted, talkative), agreeableness (e.g., being friendly and warm), conscientiousness (being organized and quick), neuroticism (e.g., being nervous and moody) and openness to experience (e.g., being creative and intellectually oriented)<sup>9-14</sup>.

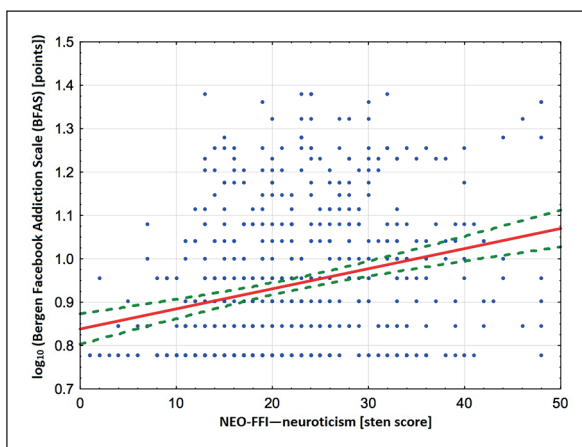
Available research has shown an association between certain personality traits and Facebook addiction. A study by Kuss et al<sup>15</sup> demonstrated that greater openness to experience and participation in online games raises the risk of Internet addiction. Increased novelty seeking is associated with openness to experience, and individuals who



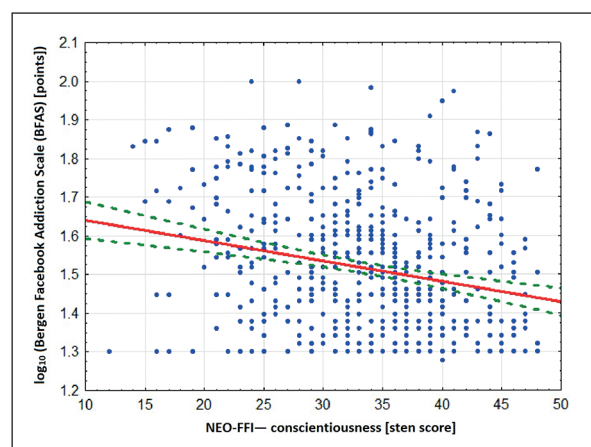
**Figure 2.** A linear regression model between the score on the BFAS and the score on the NEO-FFI agreeableness subscale.

are open to experience have high levels of interest and curiosity. In this respect, both real and virtual environments can satisfy their curiosity. It can be speculated that due to real experiences, which are more realistic than experiences from the virtual world, individuals scoring higher on the openness to experience subscale choose real rather than virtual life.

Neuroticism may be a risk factor for Facebook addiction. In our research, neuroticism positively correlated with addiction to Facebook. It can be assumed that people with high levels of neuroticism refrain from direct communication with others and use social networks to avoid direct contact. Neuroticism manifests itself in a tendency to feel unpleasant emotions, such as anxiety,



**Figure 1.** A linear regression model between the score on the BFAS and the score on the NEO-FFI neuroticism subscale.



**Figure 3.** A linear regression model between the score on the BFAS and the score on the NEO-FFI conscientiousness subscale.



fear, and depression<sup>16-22</sup>. Ebrahimipour provided evidence that this trait is positively correlated with addiction to social networking sites. People who excessively use them neglect other spheres of life in favor of being in the virtual world<sup>23</sup>.

Our research revealed that conscientiousness and agreeableness negatively correlated with Facebook addiction. Individuals who exhibit high levels of agreeableness tend to be good-natured, warm, trusting, and friendly to others<sup>24</sup>. On the other hand, individuals who exhibit high levels of conscientiousness are orderly, hardworking, and goal oriented. Consequently, such people may show a lack of interest in using Internet<sup>25</sup>. Conscientiousness is considered to be a predictor of health behaviors<sup>26,27</sup>.

The results of Wilson's research showed that people who score lower in the conscientiousness dimension use social media as a way to procrastinate, postpone something, which may involve different areas of life, therefore, it is assumed that conscientiousness is negatively related to the use of social media. Social media gives people with high scores on the neuroticism dimension more time to deliberate before acting as compared to face-to-face interaction. Some authors have linked excessive Internet use to low self-esteem and a narcissistic personality type. Low self-esteem increases the tendency to depression even in mentally healthy people. In addition, some specific social networking activities, such as posting self-portrait (selfie) photos on one's profile, may be related to narcissism and depression, although the nature of this relationship is still unclear<sup>28-30</sup>.

Our own research conducted among women demonstrated a positive correlation between the level of neuroticism and Facebook addiction. The results obtained are consistent with the reports of other authors, who indicate a significant relationship between the use of Facebook and the presence of specific individual characteristics. Individuals with high levels of narcissism, are more likely to be active on social networking sites because it gives them the opportunity to present themselves in a favorable way. Extraversion, neuroticism, and openness to experience have been proved to be positively associated with increased use of social media<sup>31</sup>. Extraversion is a trait characterized by sociability, excitability, talkativeness, assertiveness, and high emotional expression<sup>32</sup>. Extraversion is associated with increased use of Facebook<sup>29,31</sup>. Facebook satisfies the need for stimulation and social in-

teraction among extraverts<sup>5</sup>. In a study conducted by Wilson et al<sup>33</sup>, extraverted people were found to show stronger addiction to Facebook. Introversion is the opposite of extraversion. The lack of close social contacts may motivate a person to seek contacts in a virtual environment. Moreover, less extroverted individuals can compensate for their loneliness by using social networking sites and can better express themselves and their feelings in a controlled, virtual context that allows them to keep a desired distance from other people<sup>34</sup>. Our own research did not show any correlation between Facebook addiction and extraversion. Thus, despite the fact that some studies<sup>35,36</sup> have hypothesized that introverted people tend to have a poorer social network and experience more rejection by peers, there are studies<sup>37,38</sup> showing no significant differences between extraversion and introversion among people who overuse social networks. In the last decade, the number of people using social networks has increased significantly. People of all ages use the media, and their number is growing every year. Summing up these considerations, attention should be paid to the factors that make the analysis of the results difficult. An important factor is the size of the study sample (N = 556), although it is a satisfactory result in the context of a high return rate of completed questionnaires obtained through an individual approach to the respondents. The lack of clinical diagnosis of behavioral addictions seems problematic. Despite the limitations of our study, it is worth mentioning that its advantage is an individual approach to the studied women. The studies available in the literature focused on young people, excluding adults, and concerned only one type of addiction. Our own research, focused on adult women, emphasizes the need for further, in-depth analysis.

## Conclusions

The personality types of the studied women indicated relationships in terms of behavioral addictions. Women characterized by neuroticism showed stronger addiction to Facebook.

Women characterized by high conscientiousness were at lower risk of behavioral addictions, while agreeableness as a personality trait significantly protected the surveyed women against Facebook addiction.

### Conflict of Interest

The Authors declare that they have no conflict of interests.

### Ethics Approval and Consent to Participate

The study was carried out in accordance with the Declaration of Helsinki, and the protocol was approved by the Bioethical Commission of Pomeranian Medical University in Szczecin (Approval No. KB-0012/518/12/16). All subjects were informed about the study, and all provided informed consent.

### Declaration of Funding Interests

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### Authors' Contribution

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Kamila Rachubińska, Elżbieta Grochans and Anna Cybulska. The first draft of the manuscript was written by Magdalena Śniegocka, Labib Zair and Joanna Owsianowska and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

### ORCID ID

Kamila Rachubińska: 0000-0003-2200-3766. Anna Maria Cybulska: 0000-0002-6912-287X. Joanna Owsianowska: 0000-0001-9096-8477. Labib Zair: 0000-0001-5604-9936. Elżbieta Grochans: 0000-0002-3679-7002.

## References

- 1) Niewiadomski K, Zawłocki I, Nieroba E. Dorastanie w cyfrowym świecie – problem uzależnienia od komputera i internetu. *ETI* 2015; 6: 55-64.
- 2) Zawadzki B, Strelau J, Szczepaniak P, Śliwińska M. *Inwentarz osobowości NEO-FFI Costy i McCrae*. Warszawa: Wydaw. Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego, 1998.
- 3) Costa PT, McCrae RR. The Revised NEO Personality Inventory (NEO-PI-R). In: Boyle J, Matthews G, Saklofske DH. *The SAGE handbook of personality theory and assessment, Vol. 2. Personality measurement and testing* 2008; 179-198.
- 4) Muscanell NL, Guadagno RE. Make new friends or keep the old: Gender and personality differences in social networking use. *Computers in Human Behavior* 2021; 28: 107-112.
- 5) Ross C, Orr ES, Sisic M, Arseneault JM, Simmering MG, Orr RR. Personality and motivations associated with Facebook use. *Comput Hum Behav* 2009; 25: 578-586.
- 6) Janas-Kozik M, Krzystanek M. *Uzależnienia behawioralne. Skrypt dla studentów i lekarzy. Dział Wydawnictw Śląskiego Uniwersytetu Medycznego w Katowicach, Katowice, 2017.*
- 7) Dong G, Potenza MN. A cognitive-behavioral model of Internet gaming disorder: theoretical underpinnings and clinical implications. *J Psychiatr Res* 2014; 58: 7-11.
- 8) Kaptsis D, King DL, Delfabbro PH, Gradisar M. Withdrawal symptoms in internet gaming disorder: A systematic review. *Clin Psychol Rev* 2016; 43: 58-66.
- 9) Gainsbury SM. Online Gambling Addiction: the Relationship Between Internet Gambling and Disordered Gambling. *Curr Addict Rep* 2015; 2: 185-193.
- 10) Müller M, Koch U, Dickenhorst ME, Beutel E, Duvén K, Wölfling K. Addressing the question of disorder-specific risk factors of internet addiction: a comparison of personality traits in patients with addictive behaviors and comorbid internet addiction. *Biomed Res Int* 2013; 546342.
- 11) Nikbin D, Iranmanesh M, Foroughi B. Personality traits, psychological well-being, Facebook addiction, health and performance: testing their relationships. *Behav Informat Technol* 2021; 40: 706-722.
- 12) Rajesh T, Rangaiah B. Facebook addiction and personality. *Heliyon* 2020; 6: e03184.
- 13) Wiggins JS. *The five-factor model of personality: theoretical perspectives*. New York: Guilford, 1996.
- 14) Xie W, Karan K. Predicting Facebook addiction and state anxiety without Facebook by gender, trait anxiety, Facebook intensity, and different Facebook activities. *J Behav Addict* 2019; 8: 79-87.
- 15) Kuss DJ, Shorter GW, van Rooij AJ, Griffiths MD, Schoenmakers T. Assessing Internet addiction using the parsimonious Internet addiction components model – a preliminary study. *Int J Ment Health and Addiction* 2014; 12: 351-366.
- 16) Abbasi I, Drouin M. Neuroticism and Facebook addiction: How social media can affect mood? *Am J Fam Ther* 2019; 47: 199-215.
- 17) Detrick P, Chibnall JT. Frame of Reference Effects on Police Officer Applicant Responses to the Revised NEO Personality Inventory. *J Police Crim Psych* 2019; 35: 328-335.
- 18) Hardie E, Tee MY. Excessive internet use: the role of the personality, loneliness and social support networks in internet addiction. *Australian Journal of Emerging Technologies and Society* 2007; 5: 34-47.
- 19) Miceli S, Cardaci M, Scrima F, Caci B. Time perspective and Facebook addiction: The moderating role of neuroticism. *Curr Psychol* 2021; 1-10.

- 20) Rahmani S, Lavasani M. The Relationship between Internet Dependency with Sensation Seeking and Personality. *Procedia Soc Behav Sci* 2011; 30: 272-277.
- 21) Tsai HF, Cheng SH, Yeh TL, Shih CC, Chen KC, Yang YC et al The risk factors of Internet addiction a survey of university freshmen. *Psychiatry Res* 2009; 167: 294-299.
- 22) Yan W, Li Y, Sui N. The relationship between recent stressful life events, personality traits, perceived family functioning and internet addiction among college students. *Stress Health* 2014; 30: 3-11.
- 23) Ebrahimpour A, Rajabali F, Yazdanfar F, Azarbad R, Nodeh MR, Siamian H, Vahedi M. Social network sites as educational factors. *Acta Inform Med* 2016; 24: 134.
- 24) Buckner JEV, Castille CM, Sheets TL. The five factor model of personality and employees' excessive use of technology. *Comput Hum Behav* 2012; 28: 1947-1953.
- 25) Samarein ZA, Yekleh M, Tahmasebi S, Ramezani V, Sandi L. Relationship between Personality Traits and Internet Addiction of Students at Kharazmi University. *Int J Psych Beh Res* 2013; 2: 10-17.
- 26) Hagger-Johnson GE, Whiteman MC. Conscientiousness facets and health behaviors: A latent variable modeling approach. *Personality and Individual Differences* 2007; 43: 1235-1245.
- 27) Mottram AJ, Fleming MJ. Extraversion, impulsivity, and online group membership as predictors of problematic Internet use. *Cyberpsychol Behav* 2009; 12: 319-321.
- 28) Andreassen CS, Torsheim T, Brunborg GS, Pallesen S. Development of a Facebook Addiction Scale. *Psychol Rep* 2012; 110: 501-517.
- 29) Correa T, Hinsley AW, de Zuniga HG. Who interacts on the Web? The intersection of users' personality and social media use. *Comput Hum Behav* 2010; 26: 247-253.
- 30) Ehrenberg A, Juckes S, White KM, Walsh SP. Personality and self-esteem as predictors of young people's technology use. *Cyberpsychol Behav* 2008; 11: 739-741.
- 31) Mehdizadeh S. Self-presentation 2.0: narcissism and self-esteem on Facebook. *Cyberpsychol Behav Soc Netw* 2010; 13: 357-364.
- 32) Cherry K. What are the Big 5 personality traits? 2019. Publishing: <https://www.verywellmind.com/the-big-five-personality-dimensions-2795422>. Accessed 25 May 2019
- 33) Wilson K, Fornasier S, White KM. Psychological predictors of young adults' use of social networking sites. *Cyberpsychol Behav Soc Netw* 2010; 13: 173-177.
- 34) Ghos A, Dasgupta S, Basu J. Role of Personality and Narcissism in Facebook Addiction among Male and Female College Students. *Indian J Community Psychol* 2018; 14: 116.
- 35) Montag C, Flierl M, Markett S, Walter N, Jurkiewicz M, Reuter M. Internet addiction and personality in first-personshooter video gamers. *J Media Psychol* 2011; 23: 163-173.
- 36) Mehroof M, Griffiths MD. Online gaming addiction: the role of sensation seeking, self-control, neuroticism, aggression, state anxiety, and trait anxiety. *Cyberpsychol Behav* 2010; 13: 313-316.
- 37) Braun B, Stopfer JM, Müller KW, Beutel ME, Egloff B. Personality and video gaming: Comparing regular gamers, non-gamers, and gaming addicts and differentiating between game genres. *Comput Hum Behav* 2016; 55: 406-412.
- 38) Charlton JP, Danforth ID. Validating the distinction between computer addiction and engagement: Online game playing and personality. *Behav Inf Technol* 2010; 29: 601-613.
- 39) Collins E, Freeman J, Chamarro-Premuzic T. Personality traits associated with problematic and non-problematic massively multiplayer online role playing game use. *Personality and Individual Differences* 2012; 52: 133-138.