

CHAPTER TWENTY

Generalized Internet Addiction Among Chinese University Students: Associations with Internet Attitudes, Objectively Measured Smartphone Usage and Personality

Zhihao Yan, Zeyang Yang

ABSTRACT

Over the past 25 years, an increasing number of studies have investigated the problem of internet addiction, however little is known about whether internet attitudes can influence internet addiction or internet use. The present study employed both self-report questionnaire surveys and objective measurements to explore the relationships between generalized internet addiction, internet attitudes, smartphone usage and Big Five personality traits. A total of 150 Chinese university students completed an online survey. The results showed that the internet exhilaration dimension of internet attitudes and the neuroticism trait can positively predict internet addiction, while the internet affect dimension of internet attitudes and the conscientiousness trait can negatively predict it. These findings can inform our understanding of the relationship between internet addiction, internet attitudes and personality traits, which could provide us new insights for understanding the mechanisms behind the development and maintenance of internet addiction.

Keywords: Internet Addiction, Internet Attitudes, Smartphone Use, Personality, Post-Secondary Education.

INTRODUCTION

The number of internet users in China had reached 989 million by the end of 2020, accounting for 70.4% of China's total population (China Internet Network Information Center, 2021). The internet has become ubiquitous in the daily lives of most Chinese people, bringing both convenience and entertainment to the majority (e.g., online shopping, online video, gaming, etc.). However, over the past 25 years, research evidence has shown that internet use can have negative effects and become problematic or addictive among a small minority of users (Griffiths, 1996; Young, 1998). One specific internet addiction disorder, internet gaming disorder, was included in the DSM-5 and ICD-11 (American Psychiatric Association, 2013; World Health Organization, 2018). Furthermore, in a recent cross-sectional study of Chinese college students (N = 8098), the prevalence of internet addiction was 7.7% (Shen et al., 2020). Considering the high prevalence of internet use in China, this study aims to investigate relationships between severity of internet addiction and the potential factors of internet attitudes, personality traits, and objectively measured smartphone usage.

LITERATURE REVIEW AND HYPOTHESE

Internet Addiction

Since the mid-1990s, many studies have focused on excessive use of the internet or technology (Griffiths, 1996; Young, 1998). Although the term 'internet addiction' remains controversial, Griffiths (2005) has argued that any behaviour (including non-chemical) that comprises the six components of salience, mood modification, tolerance, withdrawal, conflict,

and relapse can be defined as a true behavioural addiction. There have also been a growing number of empirical studies that have investigated the detrimental effects of excessive internet use. For instance, in a longitudinal study of Chinese college students, Zhou et al. (2020) found problematic internet use can predict higher occurrence of mental health issues over time.

Davis (2001) distinguished two forms of pathological internet use (PIU): generalized PIU and specific PIU. Those with generalized PIU are more likely to waste a lot of time on several online activities, while those with specific PIU overuse one specific function of the internet, such as excessive use of online pornography or online gaming.

The Interaction of Person-Affect-Cognitive-Execution (I-PACE) model (Brand et al., 2019) describes the development and maintenance of addictive behaviours. According to this model, a person's core characteristics (e.g., personality, psychopathology, etc.) can be predisposing variables for developing addictive behaviours, and the affective and cognitive responses to specific stimuli (e.g., craving, attentional bias, etc.), along with reduced executive functions, can be mediators or moderators of the process model.

Internet Attitudes and Internet Addiction

Internet attitude has become a focus of research in recent years. Some researchers have attempted to develop scales to measure these attitudes (e.g., Klobas & Clyde, 2000; Tsai, Lin & Tsai, 2001; Zhang, 2007). However, Joyce and Kirakowsiki (2015) argued that the development of these scales may not have been properly informed by recognized theoretical frameworks, and that some of the items measure internet usage or self-efficacy rather than internet attitudes as such. They instead used the definition of attitude described by Rosenberg et al. (1960) as positive or negative evaluation toward an object, including cognitive, affective

and behavioural components to develop the General Internet Attitude Scale (GIAS) for the measurement of attitudes toward the internet. This scale has four factors: internet affect (individuals' both positive and negative feelings towards the internet), social benefit of the internet (the positive influence that internet has on society), internet detriment (the negative impact of the internet on both individuals and society), and internet exhilaration (the experienced excitement and personal thrills when people are using or about to use the internet).

Previous studies have indicated that attitudes towards the internet may influence internet use (e.g., Schumacher & Morahan-Martin, 2001; Jackson et al., 2003). For instance, Schumacher and Morahan-Martin (2001) found individuals' attitudes about the potential detrimental effects to children and health of internet can predict less usage of internet. However, little is known about whether Internet attitudes has any relationship with problematic/excessive use.

According to the I-PACE model, internet attitudes may act as cognitive and affective variables that impact online addictive behaviours. Tsai and Lin (2001) explored the relationship between internet attitudes and internet addiction among high school students, and found that attitudes could explain several aspects of internet addiction: compulsive use and withdrawal, tolerance, and related problems. Adolescents' perception of their internet use and their actual internet use behaviours were strong predictors of internet addiction, but not affective responses. However, in the 20 years since this study the internet has developed and expanded enormously, and so attitudes towards the internet and their associations with internet addiction may have changed, necessitating further investigations.

Personality and Internet Addiction

Based on the I-PACE model, some personality traits (e.g., high impulsivity, high neuroticism, low self-esteem, etc.) can be risk factors for addictive behaviours. Andreassen et al. (2013) found that high neuroticism, low conscientiousness, and low agreeableness can positively predict internet addiction. A recent meta-analysis (Kayis et al., 2016) found that all of the Big Five personality traits were significantly associated with internet addiction—Neuroticism positively so, and the other four negatively (conscientiousness, agreeableness, openness, and extraversion). However, only 12 studies met the inclusion criterion for this meta-analysis, and there was a lack of representation in the sample from East Asia. This study therefore used a sample of Chinese college students to investigate this relationship.

Objective Smartphone Use Measures Versus Self-Report Measures

Previous studies have investigated associations between digital device use and psychological well-being (Orben & Przybylski, 2019; Teng, Pontes, Nie, Griffiths & Guo, 2021), however most of these have heavily relied on self-report data, which can be easily biased. Several recent findings have suggested that there could be discrepancies between self-report digital device use and objectively measured screen time (Lin et al., 2015; Hodes & Thomas, 2021). For example, Lin et al. (2015) used a smartphone application designed to record phone use in a sample of young adults, and found that they significantly underestimated the actual time they spent on smartphone. This study therefore included the collection of objective smartphone use data.

Research Aims

This study aimed to investigate internet addiction severity among Chinese college

students, and its relationship with internet attitudes, Big Five personality traits, and objectively measured smartphone usage. We proposed the following hypotheses: (1) the four dimensions of internet attitudes would significantly predict internet addiction, (2) neuroticism would positively predict internet addiction, (3) conscientiousness, agreeableness, openness and extraversion would negatively predict internet addiction, and (4) objectively measured smartphone usage would positively predict internet addiction.

METHODS

Participants

A total of 150 participants comprising 56 males, and 94 females, as well as 60 undergraduates and 90 postgraduates, were recruited via convenience sampling at a university in southeast China. The average age was 21.91 ($SD = 2.04$), ranging from 18 to 27.

Measures

The Chinese version of Internet Addiction Test (Young, 1998) was used to assess the severity of generalized internet addiction in the participants. It includes 20 items rated with five-point Likert scales with responses ranging from 'rarely' (1) to 'always' (5). The scale has proved to be a reliable instrument to assess internet addiction severity in China (Montag, et al., 2015). The Cronbach's alpha in the current study was 0.91.

The General Internet Attitude Scale (GIAS; Joyce & Kirakowski, 2015) was used to assess the internet attitudes of the participants. The English version was translated into Chinese and validated through a back-translation process. The 21-item scale has four subscales, including internet affect (e.g., 'I feel at ease using the internet'), social benefit of the internet

(e.g., ‘The internet makes a great contribution to human life’), internet detriment (e.g., ‘Using the internet is harmful to people’) and internet exhilaration (e.g., ‘The thought of going on the internet is exciting to me’). Participants rated their agreement with these statements on a 5-point Likert scale and rated from ‘strongly disagree’ (1) to ‘strongly agree’ (5). Cronbach’s alpha for the four subscales as a whole was 0.81 in the present study.

The Chinese Big Five Personality Inventory brief version (CBF-PI-B; Wang, Meng & Yao, 2011) was used to test the big five traits of neuroticism, extraversion, agreeableness, conscientiousness, and openness. The CBF-PI-B comprises 40 items, 8 belonging to each trait, rated on a 6-point Likert scale from ‘not at all true’ (1) to ‘completely true’ (6). The scale has good psychometric properties; Cronbach’s alpha for the five dimensions were 0.85, 0.83, 0.82, 0.90 and 0.80, respectively.

In order to collect the objective smartphone-use data, we provided participants detailed instructions on how to check their phones’ screen time in the settings menu, and asked them to report their total screen time over the previous 7 days measured by their phones.

Procedure

The questionnaire was administered through the online survey platform WJX.cn in China. They were posted both in social media groups and online research pools on campus. Informed consent was obtained at the beginning of the questionnaire, and each participant completed it voluntarily.

Data Analysis

Data analysis was performed using IBM SPSS version 23. Descriptive statistics

calculated included range, mean, standard deviation, skewness and kurtosis. Pearson's correlation analysis was then conducted to evaluate the relationship between the study variables. We also performed hierarchical regression analysis to examine how age, gender, internet attitudes, personalities, and smartphone use related to internet addiction scores (the dependent variable). In step 1, we included only age and gender as independent variables, then we added the other independent variables in step 2.

RESULTS

Descriptive Statistics

Table 1 presents descriptive statistics of all study variables. The skewness and kurtosis values of the study variables indicate that all variables were approximately normally distributed according to the criteria used in Li et al. (2021). The participants' mean internet addiction score was 51.36 ($SD = 12.66$) ranging from 24 to 97 (potential range: 20 to 100) as shown in Table 1. Their mean time using their smartphones was 49.5 hours ($SD = 20.35$) per week. Based on previous studies (e.g., Montag et al., 2015), participants who score above 69 of Chinese version of Internet Addiction Test can be characterized the addicted (excessive) users. In this study, eleven participants (7.3%) could be classified as such.

Correlational Analyses

Results of the Pearson's correlation analysis is summarized in Table 2. Internet addiction score was positively correlated with internet exhilaration ($r = .53, p < .01$), neuroticism ($r = .34, p < .01$), smartphone use ($r = .25, p < .01$), and negatively associated with internet affect ($r = -.46, p < .01$), internet detriment ($r = -.37, p < .01$), and

conscientiousness ($r = -.30, p < .01$). Neuroticism was negatively correlated with internet affect ($r = -.41, p < .01$) and internet detriment ($r = -.20, p < .05$), while conscientiousness was positively correlated with social benefit of the internet ($r = .25, p < .01$).

Regression Analyses

The regression model predicting internet addiction (Table 3) showed that the two independent variables in step 1, age and gender, explained 8.1% of the variance ($F = 5.043, p < .01$). After adding the additional independent variables added in step 2, the variance explained increased to 59.5% ($F = 13.358, p < .01$). Significant predictors in step 2 were internet affect ($\beta = -.346, p < .01$), internet exhilaration ($\beta = .454, p < .01$), neuroticism ($\beta = .186, p < .05$) and conscientiousness ($\beta = -.222, p < .01$).

DISCUSSION

Using the phone screen time data, we found high internet (smartphone) engagement behaviours among Chinese university students, with a mean of 49.5 hours per week of smartphone usage (approximately 7.07 hours per day). This was much higher than the average time spent online (26.2 hours per week) of Chinese internet users overall (China Internet Network Information Center, 2021). However, smartphone use data did not significantly predict self-reported internet addiction severity in this study, which may suggest that high levels of internet engagement does not necessarily mean addictive or problematic online behaviour. As Billieux et al. (2017) argued, we should avoid potential over-pathologizing of common behaviours. A repetitive behaviour could only be judged as addiction when it has significant functional impairment (e.g., negative personal, social, educational, occupational

effects) (Billieux et al., 2017). It is important to carefully discuss high involvement behaviours without functional impairment and behavioural addictions.

Two dimensions of internet attitudes were found to significantly predict internet addiction severity in the regression model. First, we found that individuals who experienced more negative affect on internet were more vulnerable to internet addiction. According to I-PACE model, the compensatory effects may be more important than gratification effects in later stages of the addiction process. Due to the excessive behaviours, individuals may experience more negative outcomes and emotions both in real life and in the virtual world (e.g., conflicts with parents and friends, loneliness, emptiness). And these negative outcomes and feelings may be further exacerbated with repeated internet use, which makes individuals easily trapped in a vicious cycle of experiencing negative affect from internet use but continuing to overuse it anyway.

Second, we found that internet exhilaration scores can positively predict internet addiction. This may reflect the potential high craving levels of internet addicts. A recent study by Dong, Wang, Du & Potenza (2017), found that gaming behaviour enhanced craving levels in individuals with internet gaming disorder but not in recreational gamers. Our study confirms that craving is a core component of addictive behaviours, including internet addiction.

In line with I-PACE model, our results suggest that high neuroticism and low conscientiousness can significantly predict internet addiction, whereas the other three Big Five traits are not significantly associated with internet addiction, which is not entirely consistent with the conclusions of previous studies (Andreassen et al., 2013; Kayis et al., 2016). This indicates that further studies are needed to explore the relationship between personality and

internet addiction in different contexts.

There are some limitations of the present study. First, the sample size was relatively small and only comprised college students in China. Thus, further studies should investigate different groups, especially children and teenagers. Second, the present study focused on generalized internet addiction among Chinese university students, while some other specific types of excessive online behaviours (e.g., gaming, social networking sites, short video) and their potential relationships with personality and mental health issues were not investigated, and these seem to be meaningful topics for further study. Moreover, the participants might misreport their objectively measured smartphone use time, which could be another limitation. Other methods of objective technology usage data such as the frequency of picking up one's cell phone seems relevant for future study based upon some previous studies of smartphone distraction (e.g. Heitmayer & Lahlou, 2021).

REFERENCES

- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM-5*. 2013, Arlington: American Psychiatric Publishing.
- Andreassen, C. S., Griffiths, M. D., Gjertsen, S. R., Krossbakken, E., Kvam, S., & Pallesen, S. (2013). The relationships between behavioral addictions and the five-factor model of personality. *Journal of Behavioral Addictions*, 2(2), 90-99.
<https://doi.org/10.1556/jba.2.2013.003>
- Billieux, J., King, D. L., Higuchi, S., Achab, S., Bowden-Jones, H., Hao, W., Long, J., Lee, H. K., Potenza, M. N., Saunders, J. B., & Poznyak, V. (2017). Functional impairment matters in the screening and diagnosis of gaming disorder. *Journal of Behavioral Addiction*, 6(3), 285–289. doi:10.1556/2006.6.2017.036
- Brand, M., Wegmann, E., Stark, R., Müller, A., Wölfling, K., Robbins, T. W., & Potenza, M. N. (2019). The Interaction of Person-Affect-Cognition-Execution (I-PACE) model for addictive behaviors: Update, generalization to addictive behaviors beyond internet-use disorders, and specification of the process character of addictive behaviors. *Neuroscience & Biobehavioral Reviews*, 104, 1-10.
<https://doi.org/10.1016/j.neubiorev.2019.06.032>
- China Internet Network Information Center. The 47th China Statistical Report on Internet Development. 2021. Available online:
<http://cnnic.cn/hlwfzyj/hlwzxbg/hlwtjbg/202102/P020210203334633480104.pdf>.
- Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior*, 17(2), 187-195. [https://doi.org/10.1016/S0747-5632\(00\)00041-8](https://doi.org/10.1016/S0747-5632(00)00041-8)
- Dong, G., Wang, L., Du, X., & Potenza, M. N. (2017). Gaming increases craving to gaming-related stimuli in individuals with Internet gaming disorder. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 2(5), 404-412.
<https://doi.org/10.1016/j.bpsc.2017.01.002>
- Griffiths, M. (2005). A ‘components’ model of addiction within a biopsychosocial framework. *Journal of Substance Use*, 10(4), 191-197.
<https://doi.org/10.1080/14659890500114359>
- Griffiths, M. D. (1996). Internet addiction: an issue for clinical psychology?. In *Clinical Psychology Forum*, 97, 32-36. Nottingham Trent University.
- Heitmayer, M., & Lahlou, S. (2021). Why are smartphones disruptive? An empirical study of smartphone use in real-life contexts. *Computers in Human Behavior*, 116, 106637.
<https://doi.org/10.1016/j.chb.2020.106637>
- Hodes, L. N., & Thomas, K. G. (2021). Smartphone Screen Time: Inaccuracy of self-reports and influence of psychological and contextual factors. *Computers in Human Behavior*, 115, 106616. <https://doi.org/10.1016/j.chb.2020.106616>
- Jackson, L. A., Von Eye, A., Barbatsis, G., Biocca, F., Zhao, Y., & Fitzgerald, H. E. (2003). Internet attitudes and Internet use: Some surprising findings from the HomeNetToo project. *International Journal of Human-Computer Studies*, 59(3), 355-382.
[https://doi.org/10.1016/S1071-5819\(03\)00069-7](https://doi.org/10.1016/S1071-5819(03)00069-7)

- Joyce, M., & Kirakowski, J. (2015). Measuring attitudes towards the internet: The general internet attitude scale. *International Journal of Human-Computer Interaction*, 31(8), 506-517. <https://doi.org/10.1080/10447318.2015.1064657>
- Kayış, A. R., Satıcı, S. A., Yılmaz, M. F., Şimşek, D., Ceyhan, E., & Bakioglu, F. (2016). Big five-personality trait and internet addiction: A meta-analytic review. *Computers in Human Behavior*, 63, 35-40. <https://doi.org/10.1016/j.chb.2016.05.012>
- Klobas, J. E., & Clyde, L. A. (2000). Adults learning to use the Internet: A longitudinal study of attitudes and other factors associated with intended Internet use. *Library & Information Science Research*, 22(1), 5-34. [https://doi.org/10.1016/S0740-8188\(99\)00038-9](https://doi.org/10.1016/S0740-8188(99)00038-9)
- Li, L., Griffiths, M. D., Mei, S., & Niu, Z. (2021). The Mediating Role of Impulsivity and the Moderating Role of Gender Between Fear of Missing Out and Gaming Disorder Among a Sample of Chinese University Students. *Cyberpsychology, Behavior, and Social Networking*.24(8). <https://doi.org/10.1089/cyber.2020.0283>
- Lin, Y. H., Lin, Y. C., Lee, Y. H., Lin, P. H., Lin, S. H., Chang, L. R., ... & Kuo, T. B. (2015). Time distortion associated with smartphone addiction: Identifying smartphone addiction via a mobile application (App). *Journal of Psychiatric Research*, 65, 139-145. <https://doi.org/10.1016/j.jpsychires.2015.04.003>
- Montag, C., Bey, K., Sha, P., Li, M., Chen, Y. F., Liu, W. Y., ... & Reuter, M. (2015). Is it meaningful to distinguish between generalized and specific Internet addiction? Evidence from a cross-cultural study from Germany, Sweden, Taiwan and China. *Asia - Pacific Psychiatry*, 7(1), 20-26. <https://doi.org/10.1111/appy.12122>
- Orben, A., & Przybylski, A. K. (2019). Screens, teens, and psychological well-being: Evidence from three time-use-diary studies. *Psychological science*, 30(5), 682-696. <https://doi.org/10.1177/0956797619830329>
- Rosenberg, M. J., Hovland, C. I., McGuire, W. J., Abelson, R. P., & Brehm, J. W. (1960). *Attitude organization and change: An analysis of consistency among attitude components. (Yales studies in attitude and communication.)*, Vol. III.
- Schumacher, P., & Morahan-Martin, J. (2001). Gender, Internet and computer attitudes and experiences. *Computers in Human Behavior*, 17(1), 95-110. [https://doi.org/10.1016/S0747-5632\(00\)00032-7](https://doi.org/10.1016/S0747-5632(00)00032-7)
- Shen, Y., Meng, F., Xu, H., Li, X., Zhang, Y., Huang, C., ... & Zhang, X. Y. (2020). Internet addiction among college students in a Chinese population: Prevalence, correlates, and its relationship with suicide attempts. *Depression and Anxiety*, 37(8), 812-821. <https://doi.org/10.1002/da.23036>
- Teng, Z., Pontes, H. M., Nie, Q., Griffiths, M. D., & Guo, C. (2021). Depression and anxiety symptoms associated with internet gaming disorder before and during the COVID-19 pandemic: A longitudinal study. *Journal of Behavioral Addictions*, 10(1), 169-180. <https://doi.org/10.1556/2006.2021.00016>
- Tsai, C. C., & Lin, S. S. (2001). Analysis of attitudes toward computer networks and Internet addiction of Taiwanese adolescents. *CyberPsychology & Behavior*, 4(3), 373-376. <https://doi.org/10.1089/109493101300210277>
- Tsai, C. C., Lin, S. S., & Tsai, M. J. (2001). Developing an Internet attitude scale for high school students. *Computers & Education*, 37(1), 41-51.

- [https://doi.org/10.1016/S0360-1315\(01\)00033-1](https://doi.org/10.1016/S0360-1315(01)00033-1)
- Wang, M.; Dai, X.; Yao, S. (2011). Development of the Chinese Big Five Personality Inventory (CBF-PI) III: Psychometric Properties of CBF-PI Brief Version. *Chinese Journal of Clinical Psychology, 19*(4), 454-457.
- World Health Organization (2018). ICD-11 for mortality and morbidity statistics. Retrieved June 29, 2021, from <https://icd.who.int/browse11/l-m/en#/http%3a%2f%2fid.who.int%2fid%2fentity%2f1448597234>.
- Young, K. S. (1998). Internet addiction: The emergence of a new clinical disorder. *CyberPsychology & Behavior, 1*(3), 237–244. doi:10.1089/cpb.1998.1.237
- Zhou, N., Cao, H., Liu, F., Wu, L., Liang, Y., Xu, J., Meng, H., Zang, N., Hao, R., An, Y., Ma, S., Fang, X., & Zhang, J. (2020). A four-wave, cross-lagged model of problematic Internet use and mental health among Chinese college students: Disaggregation of within-person and between-person effects. *Developmental Psychology, 56*(5), 1009-1021. <https://doi.org/10.1037/dev0000907>
- Zhang, Y. (2007). Development and validation of an internet use attitude scale. *Computers & Education, 49*(2), 243-253. <https://doi.org/10.1016/j.compedu.2005.05.005>

Table 1. Descriptive statistics

Variables	No. of items	Range		Mean	SD	Skewness	Kurtosis
		Potential	Observed				
Internet addiction	20	20-100	24-97	51.36	12.66	.24	.22
Internet affect	9	9-45	17-45	28.97	4.78	.05	.37
Internet exhilaration	3	3-15	3-15	8.49	2.39	.11	-.57
Social benefit of the Internet	6	6-30	10-30	24.53	3.00	-.51	2.88
Internet detriment	3	3-15	3-15	8.97	1.60	-.22	1.13
Neuroticism	8	8-48	10-41	24.27	6.63	.22	-.20
Conscientiousness	8	8-48	13-46	34.03	5.69	-.36	.83
Agreeableness	8	8-48	17-48	34.03	5.61	-.38	.22
Openness	8	8-48	15-48	32.25	6.38	-.31	-.16
Extraversion	8	8-48	13-43	28.43	5.63	-.35	1.02
Objectively smartphone use (hours)	-	-	10-105	49.50	20.35	.18	-.17

Table 2. Pearson's product-moment correlations

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Internet addiction	-										
2. Internet affect	-.46**	-									
3. Internet exhilaration	.53**	-.07	-								
4. Social benefit of the Internet	-.05	.29**	.13	-							
5. Internet detriment	-.37**	.66**	.12	.18*	-						
6. Neuroticism	.34**	-.41**	.00	-.15	-.20*	-					
7. Conscientiousness	-.30**	.11	-.16	.25**	.08	.01	-				
8. Agreeableness	-.13	.05	.03	.12	.08	-.19*	.35**	-			
9. Openness	-.11	-.07	-.16	-.08	.07	.04	.33**	.12	-		
10. Extraversion	.08	-.01	.15	.02	.17	-.13	.18*	.26**	.46**	-	
11. Objectively smartphone use	.25**	-.15	.12	-.05	-.15	.14	-.14	.00	.02	.09	-

Note. * $p < 0.05$, ** $p < 0.01$ (2-tailed). Significant correlations coefficients are in bold.

Table 3. Hierarchical regression analyses (Dependent variable: internet addiction)

	ΔR^2	β
Step 1	.081**	
Gender (males=1, females=2)		.089
Age		-.272**
Step 2	.515**	
Gender		.051
Age		-.136
Internet affect		-.346**
Internet exhilaration		.454**
Social benefit of the Internet		.137
Internet detriment		-.019
Neuroticism		.186*
Conscientiousness		-.222**
Agreeableness		-.027
Openness		-.037
Extraversion		.093
Objectively smartphone use		.005

Note. * $p < 0.05$, ** $p < 0.01$ (2-tailed). Significant correlations coefficients are in bold.