

Attachment Patterns, Big 5 Personality Traits, and Impulsivity as Predictors of Internet
Addiction

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Abstract

During the Covid-19 pandemic, there was a substantial increase in usage of the internet. This study aims to explore the role of attachment styles, big 5 personality traits, and impulsivity in predicting internet addiction in a Lebanese sample of 309 individuals (209 females). The results reported that internet addiction positively correlates with the anxiety subscale of insecure type of attachment. Furthermore, internet addiction positively correlates with the subscales, introversion, and negative emotionality, of the Big 5 personality traits. Finally, the big five personality traits predict internet addiction over and above impulsivity and attachment. These findings provide clear implications for further research on the role of attachment styles, big 5 personality traits, and impulsivity in predicting internet addiction.

Keywords: Attachment Styles, Big 5 Personality Traits, Impulsivity, Internet Addiction, Covid-19, Pandemic

Introduction

The research on Internet Addiction (IA) was first brought forth by Dr. Kimberly Young, who stated that the Diagnostic and Statistical Manual for Mental Disorders' fourth edition (DSM-IV) should include IA (Cash, H., et al., 2012). Internet addiction is defined as excessive use of the web which may interfere and disturb daily functioning, coupled with a loss of personal control over web usage linked to immediate gratification. Like with other addictions, it is also characterized by the development of a form of tolerance (Girdhar et. al, 2020). In the DSM-V, internet addiction and problematic internet use have become potential disorders to be considered for inclusion in the DSM upon further research (Hsu, W. Y., et al., 2015). Due to the technological advancements of our societies, having devices that help individuals stay connected to the internet at all times has become a staple (López García, et al., 2020). This has led to an increase in exposure to the internet which can create a whole new range of potential triggers for people to get addicted to the internet (López García, et al., 2020). As of 2019, almost 80% of all the Lebanese population uses the internet ("Individuals using the Internet (% of population) - Lebanon | Data", 2021). A study conducted in 2012 by Dr. Nazir Hawi in a Lebanese adolescent population showed that on average, adolescents spend 7.5 hours a day on the internet and as a result are not studying, and are suffering from poor time management as well as sleep deprivation (Hawi, N. S. 2012).

Big 5 personality traits and Internet Addiction

The use of the internet has been gradually increasing in our modern world. This can lead to unhealthy levels of internet use (López García, et al., 2020). There seems to be a close relationship between internet addiction and the Big 5 personality traits (Rifat Kayis et. al., 2016). In a meta-analysis of 12 studies, negative emotionality proved to be positively correlated with internet addiction, while agreeableness, conscientiousness, extraversion, and openness to experience were negatively correlated with internet addiction (Rifat Kayis et. al., 2016). Furthermore, in a study that focused on the Instagram application, conscientiousness and agreeableness were negatively related to addiction (Kircaburun and Griffiths, 2018). In a research study on the big 5 personality traits, internet addiction, and the mediating role of coping styles, mediation analyses showed that conscientiousness played an indirect role in influencing adolescent internet addiction via decreased "emotion-focused coping", while openness to experience, extraversion, and negative emotionality also play an indirect role in influencing adolescent internet addiction via increased "emotion-focused coping" (Zhou et. al., 2016). In a study conducted on Indian adolescents, results indicated that there is a positive correlation between negative emotionality and internet addiction which suggests poor emotional regulation. The study also warned that there is an alarming need for early detection and intervention for cases of adolescent internet addiction (Julka and Upadhyay, 2020). Agbaria and Bdier (2019) studied the association of levels of religiosity, the Big-5 personality traits, and internet addiction in a college composed of Israeli and Palestinian Muslim students. The goal of the study was to identify risk factors to encourage early interventions and it was also found out that internet addiction was positively associated with openness to experience and agreeableness.

Attachment styles and Internet Addiction

The theory of attachment was originally devised by John Bowlby and Mary Ainsworth. The theory emphasizes the reactions to child and mother separation and the subsequent consequences that these reactions imply. Individuals who showcase symptoms of internet addiction report feelings of loneliness, low self-esteem, losing offline friends, and having conflictual emotional relationships with loved ones (Girdhar et. al 2020). In their recent study, Girdhar et. al (2020) stipulates that attachment styles play a role in internet addiction. Different types of attachment patterns are formed during individuals' formative years. These attachment patterns turn into internal working models that play an important role during adulthood. There are four types of attachment styles:

Secure: Infants with a secure attachment pattern happily explore and are generally calm. Adults with this pattern tend to allow themselves to seek help and properly address their emotions.

Avoidant: Infants with an avoidant attachment pattern are somewhat reluctant to explore and appear to show little interest in their mother's absence. Adults with this pattern do not easily seek help or express their emotions.

Ambivalent: Infants with an ambivalent attachment pattern show mixed patterns of behavior and appear to be difficult to console. Adults with this pattern also show mixed signals and behaviors.

Disorganized: Infants with a disorganized attachment pattern do not know how to react to their mothers. These children appeared to be afraid. This pattern is also reflected in adult behavior.

Family functioning is key in predicting what type of attachment pattern will be formed, and Internet Addiction can be characterized as a dysfunctional coping strategy that reflects emotional mismanagement.

The study's results portray that the development of an Internet Addiction can be a sign of the presence of an emotional void and that dismissive, anxious, and avoidant attachment styles positively correlate with internet addiction. Furthermore, individuals with insecure attachment styles had a higher tendency of developing an internet addiction than those with secure attachments in a study where a Rorschach test was also conducted to confirm the findings (Eichenberg et. al, 2017). Furthermore, Oldmeadow et al., (2013) reported a positive correlation between higher attachment anxiety and intensive use of the Facebook application. Interestingly, because an anxious anxiety pattern is associated with lower levels of interpersonal communication competence, these individuals are more likely to initiate online relationships and consequently are more likely to develop an addiction (Eroglu et. al, 2015).

Impulsivity and Internet Addiction

"Impulses are strong motivational urges to engage in reward pursuit or consumption and can lead to *impulsive behaviors* unless individuals effortfully inhibit or interrupt them" (Jentsch, J. D., et al., 2014, p373). Impulsivity has always been a risk factor for addictive behavior, while its relationship with non-substance-related addictions is less understood, the UPPS-P model, a prominent model for impulsivity derived from the 5-factor model (Um, M., et al., 2018), was positively associated with all addiction-related behaviors. (Rømer Thomsen, K., et al., 2018). One of the aims of our study is to prove that there exists a correlation between impulsivity and Internet addiction. A study titled: Impulsivity in Internet Addiction: "A Comparison with Pathological Gambling states that Internet addiction is a disorder which constitutes and includes a low impulse control" (Lee, H. W., et al., 2012). Another study mentioned that impulsivity is an important personality trait that can help predict a person's loss of control and/or addictive behaviors (Choi, J. S., et al., 2014). Through their experiment, Choi et al., (2014) managed to

find out that people suffering from IA also scored higher on Impulsivity than the control group. In a study that looked into the varying patterns of internet addiction and impulsivity along with different age groups, results showed that, as initially hypothesized, there was a positive correlation between internet addiction and the impulsivity trait. On the other hand, there was a negative correlation between internet addiction and the effortful control trait (Wang et. al, 2016). Blina et. al (2016) studied the relationship between dysfunctional impulsivity and internet addiction, more specifically gaming addiction. The results indicated a moderately positive relationship between internet addiction and dysfunctional impulsivity, noting that there only appeared to be a weak positive relationship associated with engagement to gaming.

Unsalver & Aktepe, (2017) reported that symptoms of internet addiction in university students were positively related to impulsivity. In a study conducted on a sample of Chinese students by Cao et. al (2007), results suggested that adolescents who have symptoms of internet addiction exhibit higher levels of impulsivity and tend to have comorbid disorders that can be linked to the development of an addiction to the internet. There is a gap in research studies linking all variables of IA, personality, and impulsivity in the Middle East, especially during the pandemic which represents a form of disrupted normality. This is why we aim to investigate potential predictors of IA such as Impulsivity, the Big 5 personality traits, and Attachment Styles. We believe that these variables will have a strong correlation effect with IA, thus enriching the existing literature and knowledge on IA and creating a standard with which we can more easily pinpoint potential victims.

In this study, we will analyze the above variables through the following hypotheses:

H1: Internet addiction will positively correlate with insecure types of attachment patterns.

H2: Internet addiction will positively correlate with the subscales, introversion, and negative emotionality, of the Big 5 personality traits.

H3: The big five personality traits will predict internet addiction over and above impulsivity.

Methods

Sample:

The convenience sample consists of 309 LAU students. The majority of the participants ranged between 18 and 30 years old (82.8%), while 8.7% ranged between 31 - 45, and 8.4% ranged between 46 - 65. 67.6% of participants were women, 30.7% were men, 0.3% were non-binary, and 0.3% opted to not disclose their gender. Out of the original 323 participants, only 309 data were included (14 participants dropped out and their incomplete data was, and some for being less than 18 or over 65).

Instruments:

Revised Adult Attachment Scale (RAAS): The RAAS is an instrument to measure the adult attachment style dimension (Ahmad, R., & Hassan, S. A. 2014). Three main dimensions are measured for the three attachment styles (avoidant, secure, anxious), these three dimensions are

closeness, dependence, and anxiety (Ahmad, R., & Hassan, S. A. 2014). The internal consistency of this scale has been improved after being revised to have a Cronbach alpha of 0.81 for closeness, 0.78 for dependence, and 0.85 for anxiety (Ahmad, R., & Hassan, S. A. 2014). These dimensions can be used and utilized to classify people into their respective attachment styles (Ahmad, R., & Hassan, S. A. 2014). It consists of 18 items that are measured on a 5-point Likert scale (1 = not characteristic of me, 2 = very characteristic of me).

Big 5 Inventory - 2 short form (BFI-2-S): The BFI-2-S is the shortened and revised version of the original BFI scale which served to categorize people's thinking and feeling into 5 personality traits (Extraversion, Agreeableness, Negative emotionality, Conscientiousness, and Open-Mindedness) (Soto, C. J., & John, O. P. 2017). The internal consistency of the BFI-2-S has been tested and retested and has an alpha score of 0.78 average across all subcategories of personality traits Soto, (C. J., & John, O. P. 2017). The BFI-2-S is a 5-point Likert type survey which participants have to choose between (1 = strongly disagree) till (5 = strongly agree). It is important to note that we will be using "introversion" as a replacement to the extraversion subscale, this can be done since the BFI's extraversion subscale measures on a linear spectrum whereby if a participant were to get a low score on the extraversion subscale they will then be considered as being introverted.

Internet Addiction Test (IAT): The IAT is a scale used to measure the compulsive and addictive use of the internet without focusing on any specific category within it. It carries a reliability Cronbach alpha score of 0.90 (Keser, H., et al., 2013). It is in the form of a 5-point Likert scale (1 = rarely, 5 = always) (Keser, H., et al., 2013). It measures four criteria that make up IA (1: giving importance to internet activity, 2: negative feelings while offline, 3: increased tolerance to online situations, 4: Ignoring problematic behaviors) (Keser, H., et al., 2013).

Abbreviated Impulsiveness Scale (ABIS): The ABIS is the short version of the longer BIS-11 scale (Coutlee, et al., 2014). It is a 5-point Likert scale (1: rarely/never, 5: almost always/always) (Coutlee, et al., 2014). The scale focuses on measuring three factors that make up impulsiveness (attention – motor – non-planning) (Coutlee, et al., 2014). The Cronbach alpha reliability of the test to measure for these factors are attention: 0.72, motor: 0.75, non-planning: 0.75 (Coutlee, et al., 2014).

Study procedure:

The procedure for this study allows for full anonymity. A link to the google forms questionnaire was disseminated via social media platforms and individuals volunteered to take part in the study. Before taking the questionnaire, the link automatically supplies the would-be participants with a consent form to ensure their agreement in partaking in this study. If they opted not to participate in the study, the questionnaire was not administered. All information and results from the questionnaire were treated only by the investigators in the research to maintain confidentiality. This study has been reviewed and approved by the Lebanese American University Institutional Review Board: LAU.SAS.MM1.29/Mar/2021.

Statistical Analysis:

Pearson's correlations were administered to analyze the correlations between used variables (p values < 0.5). We applied a three-step hierarchical regression to determine the strength of the predictability of the key variables.

Finally, the appendices contain the link to the questionnaire for the preview of the list of questions asked. (See [Appendix 1](#))

Results

H1: Internet Addiction will positively correlate with insecure types of Attachment Patterns. Bivariate correlations showed that there was a significant relationship between Attachment styles and IA. Moderately significant positive correlations were found between Attachment and Internet Addiction ($r = 0.413, p < .01$) (see [Table 1](#)). Attachment and its three subscales; closeness, dependency, and anxiety, showed a significant relationship with Internet Addiction. The anxiety subscale of attachment moderately and positively correlated with IA ($r = 0.400, p < 0.01$). The closeness and dependency subscales of attachment were weakly and negatively correlated with IA at ($r = -.163, p < 0.01$) and ($r = -.188, p < 0.01$) respectively.

H2: Internet Addiction will positively correlate with the subscales, introversion, and negative emotionality, of the Big 5 personality traits.

Bivariate correlations proved our hypothesis and showed that the Big Five personality traits and four of its five subscales; Conscientiousness, Agreeableness, Introversion and Negative Emotionality correlated significantly with Internet Addiction. Conscientiousness and Agreeableness negatively correlated with IA at ($r = -.365, p < .01$) and ($r = -.123, p < .05$), respectively whereas introversion and Negative Emotionality positively correlated with IA at ($r = 0.218, p < .01$) and ($r = 0.295, p < .01$), respectively (see [Table 1](#)).

H3: The Big Five personality traits will predict Internet Addiction over and above Impulsivity and Attachment Styles.

A three-step hierarchical regression analysis was carried out with Internet Addiction (IA) as the criterion. At step 1, with Impulsivity as the only predictor, the model was marginally significant ($F(3,305) = 12.277, p < .001, \text{Adj } R^2 = .099$). At step 2, the Attachment Styles were added to the equation, ($F(4,301) = 11.478, p < .001, \text{Adj } R^2 = .208$). At step 3, the Big Five Personality Traits were added to the equation, ($F(5,296) = 2.517, p < .05, \text{Adj } R^2 = .227$); Introversion ($\beta = .081, p < .01$), and Negative Emotionality ($\beta = -.012, p < .01$) as positive predictors of IA. Conscientiousness ($\beta = -.187, p < .05$), and Agreeableness ($\beta = .050, p < .01$) were negative related predictors of IA. At this stage, the model explained significantly more variance in the outcome measure than at step 2 ($\Delta F(4,301) = 11.478, p < .001, \text{Adj } R^2 = .208, p < .01$).

Discussion

This study examined the influence of Big 5 personality traits, attachment patterns, and Impulsivity on Internet Addiction.

Attachment patterns and Internet Addiction

Attachment patterns explained a unique variance of internet addiction in a bivariate correlation. Therefore, this finding partially supports our first hypothesis (H1). Our results reported that the insecure type of attachment “anxiety” positively correlates with IA, However, the insecure type of attachment “dependency” negatively correlated with IA. This might be attributed to the fact that people who have a dependent attachment style rely on frequent live interactions and prefer them over internet relationships that might not fulfill their dependency needs. Between the three subscales of attachment of closeness, dependency, and anxiety, the anxiety subscale was the most significant predictor of Internet Addiction. This was in line with previous studies, showing that an anxious type of attachment is most predictive of Internet Addiction (Liu, C., & Ma, J. L. 2019). Closeness and dependency subscales only marginally predict Internet Addiction; this mirrors the results obtained by Eichenberg, C., et al., (2017) where they found that some insecure attachment styles are positively correlated with IA. Furthermore, our findings add to the scarce resources that studied the dynamics between Attachment Patterns and Internet Addiction in the Middle East. Our research helped prove that the anxious form of attachment may play a role in predicting the development of severe Internet Addiction symptoms.

The Big 5 Personality traits and Internet Addiction

The second hypothesis (H2) was supported by the results. Bivariate correlations showed that the Big Five personality traits and four of its five subscales; showed a significant relationship with IA. Conscientiousness and Agreeableness marginally and negatively correlated with IA, while Introversion and Negative Emotionality marginally and positively correlated with IA, therefore proving our hypothesis. Our findings fall in line with previous literature. Our results also add to the available data in the field of personality trait predictors of Internet Addiction and enhance the scarce research that applies to the Middle East. These findings are of particular relevance within the context of a mid-pandemic era of extensive internet use as previous personality predictors have been maintained under this specific set of circumstances. Our findings do not align with previous research in terms of relationship strength. Previous research showed a very strong relationship between Negative Emotionality and Introversion with IA (Rifat Kayis et. al, 2016), while our results only showed a marginal relationship. This does make sense within the context of the times since we are fast approaching the end of the Covid-19 pandemic. This forced most of the globe to have to adapt to quarantines, online teaching, online work, and even online extra-curricular activities. In Lebanon, where this study was performed, the level of internet penetration (the relationship between internet usage in a country and its demographic data) in February 2021 was 78.2% (Kemp, 2021). Therefore, it is arguable that real-life personality traits now apply to virtual situations as virtual life has replaced real-life during the last year. In this sense, an extraverted individual could potentially develop symptoms of Internet Addiction within this context, because the internet replaced real-life situations. The internet encompassed the dynamics of the workplace as well as personal relationships. Our research aided in proving that the internet was redefined post-pandemic, and so was the strength in predictivity of certain personality traits.

Impulsivity, Attachment Styles, the Big 5 Personality Traits, and Internet Addiction

A three-step hierarchical regression proved that impulsivity did significantly predict Internet Addiction; adding the Attachment Styles led to a slight increase in variability between attachment and IA in comparison to Impulsivity. At the third step, adding the Big 5 Personality traits led to an even larger increase in variability than seen in Attachment and Impulsivity. This proves our hypothesis which states that the Big Five personality traits predict IA over and above Impulsivity and Attachment Styles. Furthermore, our results reported that two of the Big Five subscales (Introversion and Negative Emotionality) were marginal positive predictors of IA, while another two subscales of the Big Five (Conscientiousness and Agreeableness) were marginal negative predictors of IA. While our results somewhat resemble findings in previous literature (Choi, J. S., et al., 2014), the strength of the relationship between the variables is weaker. This again might be attributed to the fact that this study was performed during a mid-pandemic setting where the use of the internet has greatly increased due to Covid-19 quarantines. Our questionnaire revealed that 296 of the participants (95.8%) reported an increase in internet usage during quarantine (see [Table 2](#)). As more people began to adapt their daily lives to the virtual world, it can be argued that there could be a shift between the relationship of these subscales and IA. For example, there are some researchers which support the idea that IA and extraversion are positively correlated (Kayaş, et al., 2016). However, if an extraverted person was forced to socialize online (which is the case in the pandemic) then it is likely that they will begin replacing the pleasure previously associated with social interactions with online interactions. Furthermore, as mentioned by Sutin, A. R., et al., (2020), it is possible that personality changes occurred during quarantine. This could explain the discrepancy in the relationship strength among variables and be an incentive for future studies that test this phenomenon.

Limitations and Suggestions For Future Research

Some limitations of the study are worth noting. Our study was conducted during a pandemic. Therefore, it is difficult to generalize our results to the dynamics of more conventional times. Although attachment patterns and Big 5 personality traits are considered to be predictive of Internet Addiction, causality cannot be determined from these results. Also, the sample was non-representative of the entirety of the Lebanese population. Despite these limitations, our study has several strengths. This is the first study that focuses on the Lebanese population post-pandemic that explores Attachment Patterns, Impulsivity, and the Big Five Personality Traits and their effect on Internet Addiction. The results of the study highlighted the predictive nature of certain subscales of Attachment, the Big 5, and impulsivity on Internet Addiction. These findings can aid in enhancing preventative measures as well as therapy methods for Internet Addiction. The study also helped clarify the manner through which a pandemic and an increased necessity for the internet can change conventionally established predictors of addiction, as well as contribute to studying the phenomenon of personality changes occurring due to quarantine lockdowns and prolonged internet usage.

Future research should investigate whether the pandemic has shifted the predictability of Internet Addiction of the subscales of the Big 5 as well as the specific ways through which a childhood established attachment pattern can predict Internet Addiction. Another area for further studies relates to the differences and commonalities between predictors in different types of addictions. Given the impact of the pandemic around the world, further research should study samples from different countries; using longitudinal designs as well as different forms of data collection to

better assess the full range of potential influences of attachment patterns, impulsivity, and Big 5 Personality Traits on Internet Addiction. Also, pre-post quarantine tests should be run to control for the effect of a pandemic on personality traits and attachment patterns on IA. Since this study revolves around personality traits as predictors of IA, future research should control for factors that might affect personalities over acute periods as well as different personality traits not covered here. Overall, our research findings could potentially aid in preventing cases of Internet Addiction or even better identify its possible predictors.

Conclusion

This study provided a preliminary view on the relationship between personality traits, impulsivity, and attachment patterns on IA in a pandemic setting. While our results fall in line with previous research, the strength of the relationship varies. This discrepancy is not unexpected in the pandemic setting. However, it does bring forth new outlier effects to the table. Now that the world has experienced and adapted its work, education, and daily life to a virtual setting, this may influence future IA patterns and their respective personality predictors.

We saw that Introversion, Negative Emotionality, and Anxious insecurely attached individuals are at risk of developing IA, and therefore it is likely that they will resort to excessive internet use as a means of coping with stressors. They are also more likely to abuse the internet's recreational purposes, and it is, therefore, important to introduce them to healthier habits and coping mechanisms.

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Appendices and Tables:

Table 1:

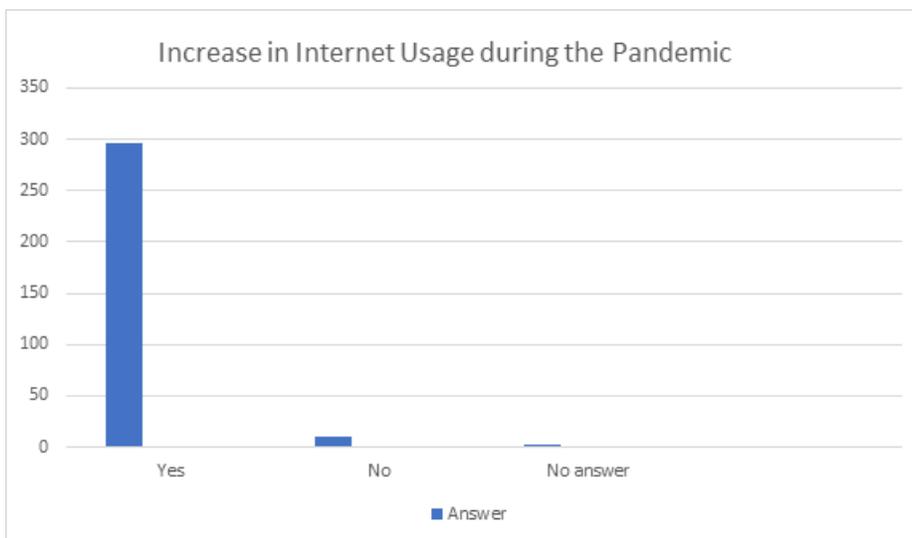
	IATtotal	Attention	Motor	Emotionality	ABIStotal	Introversion	Agreeableness	Conscientiousness	NegativeEmotionality	OpenMindedness	Close	Depend	Anxiety
IATtotal	1	.312**	.225**	.125*	.273**	-.218*	-.123	-.365**	.295**	.023	-.163*	-.188**	.400**
Attention	.312**	1	.520**	.566**	.855**	-.225**	-.184**	-.587**	.393**	-.048	-.203**	-.093	.249**
Motor	.225**	.520**	1	.378**	.793**	-.009	-.269**	-.331**	.238**	-.075	-.041	-.026	.101
Emotionality	.125*	.566**	.378**	1	.786**	-.121*	-.136*	-.434**	.135*	-.014	-.096	.048	-.029
ABIStotal	.273**	.855**	.793**	.786**	1	-.143*	-.245**	-.553**	.317**	-.058	-.138*	-.030	.134*
Introversion	-.218*	-.225**	-.009	-.121*	-.143*	1	.146*	.336**	-.305**	.099	.348**	.045	-.339**
Agreeableness	-.123	-.184**	-.269**	-.136*	-.245**	.146*	1	.365**	-.152**	.004	.435**	.253**	-.154**
Conscientiousness	-.365**	-.587**	-.331**	-.434**	-.553**	.336**	.365**	1	-.422**	.005	.258**	.162**	-.367**
NegativeEmotionality	.295**	.393**	.238**	.135*	.317**	-.305**	-.152**	-.422**	1	-.049	-.214**	-.236**	.539**
OpenMindedness	.023	-.048	-.075	-.014	-.058	.099	.004	.005	-.049	1	.134*	.149**	-.105
Close	-.163*	-.203**	-.041	-.096	-.138*	.348**	.435**	.258**	-.214**	.134*	1	.485**	-.385**
Depend	-.188**	-.093	-.026	.048	-.030	.045	.253**	.162**	-.236**	.149**	.485**	1	-.403**
Anxiety	.400**	.249**	.101	-.029	.134*	-.339**	-.154**	-.367**	.539**	-.105	-.385**	-.403**	1

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

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

Notes: IAT = Internet Addiction test. ABIS = Abbreviated Impulsivity Scale - Subscales for Impulsivity: Attention, Motor, and Emotionality. Subscales for BFI: Introversion, Agreeableness, Conscientiousness, NegativeEmotionality, and open mindedness. Subscales for Revised Adult Attachment Scale: Close, Depend, Anxiety.

Table 2:



This table shows the number of participants who reported an increase in Internet Usage during the pandemic.

Appendix 1:

Link to the full disseminated questionnaire:

<https://forms.gle/W6wD3FEU7LDyR44C9>