Problematic Internet Usage, Personality, Loneliness and Psychological Wellbeing in Emerging Adulthood

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Problematic Internet Usage, Personality, Loneliness and Psychological Wellbeing in
Emerging Adulthood.ⁱ

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Abstract

The current study explored the relationship between problem internet use, personality, loneliness and wellbeing in emerging adulthood. An online survey using questionnaires assessed 673 emerging adults (247 males and 426 females) aged between 18-25 years on measures of problem internet use, personality, loneliness and wellbeing. Results show that problematic internet use is directly related to emotional stability, conscientiousness, loneliness and wellbeing. This relationship holds which ever direction of relationship between the personality variables and problematic internet use is posited. It is argued that understanding the risk and protective factors for problem internet use is particularly important at this emerging adult stage where attitudes, traits and behavior are malleable. There is a need for more longitudinal data on problem internet use in emerging adulthood in order to prevent it leading to more serious pathology.

Key words: Problematic internet use, personality, loneliness; psychological wellbeing.

Introduction

A systematic review of the evidence for internet use, self-harm and suicide in adolescents and emerging adults concluded there is significant potential for harm through normalisation, triggering, competition and contagion (Marchant et al., 2017). However, the same review suggests there is a lot of potential to use the internet for crisis support, reduction of sense of social isolation, delivering interventions, and outreach (Marchant et al., 2017). While caution should be exercised in pathologizing internet behaviour there is now a widespread literature identifying internet addiction as a disorder and reporting interventions to treat it (Kuss, & Lopez-Fernandez, 2016; Kuss, Griffiths, Karila, & Billieux, 2014; Muusses, Finkenauer, Kerkhof, & Billedo, 2014; Przepiorka, Blachnio, Miziak, & Czuczwar, 2014; Shapira, et al., 2003; Singh Balhara, Singh, & Bhargava, 2019; Thorens, 2014; Volungis, Kalpidou, Popores, & Joyce, 2019; Winkler, Dörsing, Rief, Shen, & Glombiewski, 2013).

No universal definition of cognitions and behaviours associated with problematic or addictive internet use currently exists. For the purpose of this study and for unification, problematic internet usage has been defined as risky, impulsive or excessive internet use leading to social, emotional, physical or functional impairment. Terms related to problematic internet usage include internet addiction and internet dependence or compulsive internet use (Chou, Condrón, & Belland, 2005). Prevalence rates recorded for problematic internet usage across nine European countries were between 14% and 55% (Laconi et al., 2018) suggesting a growing trend in problematic internet use due to the rapid development and easy access of the internet.

The argument that problematic internet use may be a consequence of a social need is evidenced by the link between it and loneliness such that being lonely made motivate frequent

Problematic Internet Usage and Wellbeing.

use of internet sources (Amichai-Hamburger, & Ben-Artzi, 2003; Apaolaza, Hartmann, Medina, Barrutia, & Echebarria, 2013; Çevik, & Yildiz, 2017; Nowland, Necka, & Cacioppo, 2017). Some research suggests problematic internet use can lead to a decline in social interaction subsequently increasing feelings of loneliness and negatively affecting wellbeing, while other evidence suggests social media sites can lower feelings of social loneliness and improve wellbeing (Apaolaza et al., 2013; Nowland, Necka, & Cacioppo, 2017).

Levels of internet use have also been shown to relate to dimensions of personality including conscientiousness and extraversion in a range of studies (Chang, Lee, & Hsieh, 2019; Jackson, et al., 2003; Kayış, et al., 2016; Koronczai, Kökönyi, Griffiths, & Demetrovics, 2019; Shi, & Du, 2019; Volungis et al., 2019). Kayış, et al., (2016) in a meta-analysis of twelve studies concluded that internet addiction was directly correlated with neuroticism (or emotional instability), whereas openness to experience, extraversion, conscientiousness and agreeableness were inversely related. These were cross sectional studies so direction of causality cannot be established. Shi and Du (2019) found neuroticism to be directly related, and agreeableness and conscientiousness to be inversely related to internet addiction in Chinese medical students. The link between neuroticism and internet addiction seems to be fairly consistent across studies and measures (Chang, Lee, & Hsieh, 2019;). Koronczai, Kökönyi, Griffiths, and Demetrovics, (2019), found a strong link between low levels of conscientiousness and internet addiction and neuroticism had an indirect link via depression. They suggest that conscientiousness may be a protective factor and neuroticism a risk factor for internet addiction. This raises the thorny question of direction of causality. Most researchers assume a causal link from personality to addiction though most studies are cross sectional. One longitudinal study found extraversion and neuroticism to be related to internet use when participants first started using it, but not later (Jackson et al, 2003). However, the authors didn't measure addiction or problematic internet

Problematic Internet Usage and Wellbeing.

use. Assuming that some dimensions of personality have a causal effect on internet use at later stages of life might be more justified but given the malleability and changeability of personality in emerging adulthood this is problematic (Van Dijk, Hale, Hawk, Meeus & Branje, 2020; Robins, Fraley, Roberts, & Trzesniewski, 2001). Reciprocal relations of causality are likely to exist.

Although the evidence is not consistent there is an argument that problematic internet usage is linked in one way or another to loneliness and negative impact on wellbeing (Apaolaza et al. 2013; Muusses et al. 2014; Nowland, Necka, & Cacioppo, 2017). In addition, personality, particularly conscientiousness and emotional stability (Neuroticism) is related to problematic internet use (Chang, Lee, & Hsieh, 2019; Jackson, et al., 2003; Kayış, et al., 2016; Koronczai, Kökönyei, Griffiths, & Demetrovics, 2019; Shi, & Du, 2019; Volungis et al., 2019).

The aim of this study was to explore the relationship between problematic internet use, the big five dimensions of personality, loneliness and wellbeing in a sample of emerging adults. The evidence reviewed above is equivocal, particularly about the relationship between personality and problematic internet use. There is evidence that personality is malleable during emerging adulthood (Blonigen et al., 2008; Branje, Van Lieshout, & Gerris. 2007). Based on the evidence two possible models of the relationship between problematic internet usage, the big five dimensions of personality, loneliness and well being were proposed as shown in Figure 1. In the first model it is proposed that problematic internet use predicted personality, and in the second model the reverse is suggested. The aim of the study is mainly to test the relationships as proposed in both models.

Insert Figure 1 about here

Method

Problematic Internet Usage and Wellbeing.

Participants: A sample of 673 emerging adults (247 males and 426 females) were recruited via convenience and snowball sampling to participate in this study. Participants were aged between 18-25 years (Mean = 20.43, Sd = 1.87, Median and Mode both = 20). A Priori sample size estimation was carried out using G*Power 3.1.9.2 for a medium effects size and a power estimation of .95 and indicated a minimum sample size of 220. With 673 participants the study was well powered.

Procedure: After ethical approval from the School of Psychology Ethics Committee an online survey using the Qualtrics platform was posted on Facebook and Twitter and e-mailed to a sample of students. A participation information sheet provided details of the study and instructions for participants to follow, and a tick box consent form was completed before the questionnaire was attempted. We confirm that we have reported all measures, conditions, data exclusions, and how we determined our sample size.

Ethical considerations: The School of Psychology Ethics Committee gave permission for data to be collected. Participation was anonymous and participants were provided with an information sheet and completed a tick box consent form.

Measures: A demographic questionnaire recorded sex, and age, before the following standard measures were presented:

The Online Cognition Scale: The OCS is a 36-item questionnaire designed to measure problematic internet use. Items on the scale focus on cognitions instead of behaviours. The OCS measures how comfortable individuals feel with their online persona versus their real-life persona, how much an individual uses the internet to procrastinate offline responsibilities, extent to which an individual feels that the internet is out of their control, and feelings of worthlessness related to the Internet. Responses were rated on a seven- point Likert scale of statements including; "I get more respect online than in real life". Previous studies using the OCS have demonstrated reliability ranging from .81 to .94, and it has been frequently used as

Problematic Internet Usage and Wellbeing.

a reliable and valid measure of problematic internet use (Davis, Flett and Besser, 2002). In the current study the composite scale had an Alpha of .82.

The revised UCLA loneliness scale: This is a twenty-item Likert scale, measuring feelings of social isolation and loneliness. For example; “I feel in tune with the people around me” and “No one really knows me well” (Russell, Peplau & Cutrona, 1980). Participants rate each item from 1 (never) to 4 (often). Jobe, Williams, & White (2007) reported high reliability, with an internal consistency of .92, and a test- retest reliability of .73. In the current study the composite scale had an Alpha of .90.

The Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003): This is a shortened ten-item version of the Big Five Inventory designed to measure personality in terms of extraversion, agreeableness, conscientiousness, emotional stability, and openness. Gosling Rentfrow and Swann, (2003) report internal consistency of extraversion ($\alpha = .87$), agreeableness ($\alpha = .70$), conscientiousness ($\alpha = .75$), neuroticism ($\alpha = .81$), and openness ($\alpha = .65$). Participants rate each item on a Likert scale from 1 (Disagree strongly) to 7 (strongly agree). In our study we found reliability of extraversion ($\alpha = .85$), agreeableness ($\alpha = .75$), conscientiousness ($\alpha = .71$), emotional stability ($\alpha = .72$), and openness ($\alpha = .78$).

The Warwick-Edinburgh Mental Well-being Scale – Short form: The WEMWBS-s is a seven-item measure of psychological functioning and participants subjective wellbeing. A Likert scale measures responses from 1 (never) to 5 (often). All items have been worded positively and address aspects of positive mental health. The WEMWBS is psychometrically robust and quick to answer. High test- retest reliability was recorded at 0.83. WEMWBS has good face validity among the general population with no floor or ceiling effects. Additionally, WEMWBS has good face validity among public health practitioners and policy makers in the UK (Tennant et al., 2007). The scale had an Alpha of .90 in our data.

Results

Problematic Internet Usage and Wellbeing.

The aim of this study was to test two possible models of the relationship between problematic internet usage, personality, loneliness and wellbeing as shown in Figure 1.

Before that some bivariate correlations were calculated as descriptions of the data. See Table 1.

Insert Table 1 about here

Problematic internet use had a highly significant inverse relationship with wellbeing, and a small but significant direct relationship with loneliness. It also had a significant inverse relationship with conscientiousness and emotional stability but no significant relationship with agreeableness, extraversion, or openness. Emotional stability, conscientiousness, agreeableness, and extraversion were directly correlated with wellbeing. Extraversion, agreeableness, conscientiousness, emotional stability, and openness, each had an inverse relationship with loneliness. The pattern of correlations fit with the proposed models.

The main aim was to test the models in Figure 1 for which we used path analysis via structural equation modelling with AMOS-25. See Figures 2 and 3.

Insert Figures 2 and 3 about here

The model in Figure 2 considered PIU as predictive of personality and was an excellent fit for the data ($\chi^2(2) = 6.96$, $p = .03$, $CMIN/DF = 3.48$, $GFI = .99$, $NFI = .99$, $IFI = .99$, $CFI = .99$, $RMSEA = .06$, $PCLOSE = .284$).

The model in Figure 3 consider personality as predictive of PUI and was also an excellent fit for the data ($\chi^2(4) = 7.87$, $p = .09$, $CMIN/DF = 1.97$, $GFI = .99$, $NFI = .97$, $IFI = .99$, $CFI = .99$, $RMSEA = .035$, $PCLOSE = .639$).

As this is cross sectional data it is impossible to draw definitive conclusions, but one can speculate that reciprocal relations of causality may exist. The interesting difference is that in Figure 3 neither agreeableness or extraversion are predictive of PIU, in Figure 2 PIU is predictive of both agreeableness and extraversion.

Discussion

The aim of this study was to explore the relationship between problematic internet use, personality, loneliness and wellbeing in a sample of emerging adults, and to test if both models in Figure 1 could be supported by the data.

Results from this study indicate that problematic internet use has a significant inverse correlation with psychological wellbeing. Those students who reported higher levels of problematic internet use have lower wellbeing. Problematic internet use has a significant direct correlation with loneliness. These findings are consistent with previous research by Çevik, & Yildiz, (2017) who found an association between increased problematic internet use and loneliness, depression and academic stress in International students studying abroad thus, lowering their psychological wellbeing. Additionally, this research is in line with Muusses et al. (2014) who provides evidence that problematic internet use contributes to a decline in wellbeing over time in regard to loneliness, depression and stress. Loneliness has a significant inverse relationship with wellbeing as shown in previous research by Nowland et al. (2017).

Both models from Figure 1 are upheld by the data in relation to conscientiousness and emotional stability. In other words, whether conscientiousness and emotional stability are entered as predictive of problematic internet use or as predicted by problematic internet use the relationship is equally supported. However, with extraversion and agreeableness the only direction that is supported by the data is where problematic internet use is the predictor. Extraversion and agreeableness do not appear to predict problematic internet use. Of course, this is cross sectional data and one can only suggest that this needs to be tested in a longitudinal study. Openness to experience did not prove to have a significant relationship in the model.

The data does suggest that whatever the direction of causality, both personality and loneliness play a role in the relationship between problematic internet use and wellbeing in this sample. There is some evidence that the negative impact of internet use is more consistent in older childhood and emerging adulthood. (Lobel, Engels, Stone, Burk, & Granic, 2017; Pallavicini, Ferrari, & Mantovani, 2018).

Research by Volungis et al. (2019) found smartphone addiction symptoms in students were positively associated with socio- emotional distress including depression, anxiety and poor interpersonal relationships stemming from loneliness. Tian et al. (2017) suggests this is due to students experiencing a shift in reliance on interpersonal relationships from family members to friends and other social relationships contributing to problematic internet use. Additionally, Individuals who experience low levels of peer and teacher- student relations are more likely to use the internet to compensate for lacking emotional peer and social relationships (Jia et al., 2017). Chang et al. (2019) concluded the internet may be useful for developing interpersonal relationships without communicating fact-to-face. Individuals who are more anxious and neurotic about developing interpersonal relationships are more vulnerable to utilize the internet problematically. Additionally, problematic internet users are likely to have poor interpersonal relationships, subsequently inducing more loneliness (Moretta, & Buodo, 2020) thus, problematic internet use is associated with the breakdown of social relationships and a significant predictor of loneliness (Khazaei, Khazaei, & Ghanbari, 2017, Koronzai et al., 2019). So lonely individuals may seek out the internet to compensate for poor social relations, but if their use turns problematic loneliness is exacerbated.

In the current study, data obtained suggest the personality dimensions extraversion, agreeableness, conscientiousness and emotional stability produced significant partial correlations with wellbeing. This finding is congruent with previous research by Volungis et al. (2019) who found these dimensions of personality were all negatively correlated with

Problematic Internet Usage and Wellbeing.

smartphone addictive behaviours thus, negatively affecting wellbeing. Furthermore, (Kayaş et al., 2016) carried out a meta- analysis investigating relations between Internet addiction and Big Five personality traits. Results propose all Big Five personality traits had a meaningful association with internet addiction. Agreeableness, extraversion, openness, emotional stability and conscientiousness were negatively related with internet addiction thus, serving as protective factors for problematic internet use.

Similarly, Koronczai et al. (2019) reported low conscientiousness and emotional stability negatively correlated with problematic internet use. Researchers report low conscientiousness and emotional stability are not specific predictors of problematic internet use however, common in individuals diagnosed with psychopathologies such as depression. Koronczai reports low emotional stability indirectly affects problematic internet use via psychological distress (e.g. depressive symptoms) whereas low conscientiousness directly affects problematic internet use. Thus, psychopathological symptoms of depression are significant predictors of problematic internet use. This is an important study as it suggests low conscientiousness and emotional instability may contribute to the maintenance of problematic internet use.

Findings are limited in this study as it is correlational and cross sectional. Although this study shows an association between internet use, personality, loneliness and psychological wellbeing it does not demonstrate which is a causing factor. A longitudinal study would be required to verify. A strength of this study is that it adds to the existing research regarding problematic internet use, loneliness, personality and psychological wellbeing. This can inform future interventions in the development of treatment programmes to reduce problematic internet use in society.

In relation to personality, Attachment theory should be explored in a future study as research (Chang et al., 2019) suggests individuals with an insecure attachment tend to exhibit

Problematic Internet Usage and Wellbeing.

problematic internet use. In comparison, securely attached people are less likely to develop an internet addiction. Evidence of attachment could add to the existing research as to why people use the internet problematically.

Problematic internet use should be understood as a public health concern, globally as the findings of this study suggest problematic internet use is significantly associated with a decline in wellbeing (World Health Organization. (2015). Furthermore, personality should be considered when developing interventions to prevent problematic internet use as personality traits can be evaluated as both risk and protective factors. Kuss and Lopez-Fernandez (2016) suggests individuals may require help due to problematic internet use as they cannot cope with their experiences however, treatment of problematic internet use has not yet been standardised (Khazaei et al., 2017). The positive psychology approach suggests the positive psychology interventions as a treatment for problematic internet use. Positive psychology theory suggests that positive interventions improve wellbeing by directly and indirectly fostering positive thoughts, emotions and behaviours. The goal is to reduce negative emotions and improve positive emotions subsequently, improving quality of life (Khazaei et al., 2017). Positive psychology focuses on human abilities such as pleasure, optimism and happiness instead of focusing on human disabilities.

The internet is used globally for connectivity however, the nature of its use varies. Internet users are made up of different personality types with differing needs and motives (Amichai-Hamburger & Ben-Artzi, 2003). This study suggests personality dimensions play a role in the process of developing problematic internet use. This is important when considering psychopathologies as individuals prone to mental health problems are more likely to avoid face-to-face communication, becoming dependent on online interactions leading to an increased risk of further loneliness and problematic internet use.

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Figure 1: Proposed models of the relationship between Problematic Internet Use and Wellbeing

Table 1: Bivariate correlations for study variables

	1	2	3	4	5	6	7
1. Wellbeing							
2. Loneliness	-.35**						
3. Problem Internet Use	-.62**	.19**					
4. Extraversion	.18**	-.46**	-.02				
5. Agreeableness	.10**	-.47**	-.07	.10**			
6. Conscientiousness	.42**	-.19**	-.33**	.04	.21**		
7. Emotional Stability	.34**	-.23**	-.21**	.23**	.18**	.25**	
8. Openness	.02	-.23**	-.01	.31**	.13**	-.02	-.22**
		*p<.05	**p<.01

Figure 2: Path model of predictors of wellbeing: PIU=problem internet use
;LNS=loneliness; ES= emotional stability
; Con=conscientiousness; Agr=agreeableness; Ext=extraversion

Figure 3: Path model of predictors of wellbeing, personality preceding:
 PIU=Problem Internet Use; LNS=Loneliness; Con= conscientiousness
 ;ES= emotional satbility; Agr=Agreeableness; Ext=Extraversion

ⁱ We will make data, analytic methods (code), and study materials available to other researchers on request to the first author. This study was not pre-registered.