A Literature Review of Internet Addiction with a Focus on University Students

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Abstract

Internet Addiction (IA) has been compared to DSM-5 Addictive Disorders and is defined as one's inability to control Internet use leading to functional difficulties in multiple domains including psychological, social, and occupational. IA is observed amongst high-Internet-using populations including university students. Despite some design limitations, research has identified individual characteristics and potential predictors of IA in university students, including comorbidities of insomnia, depression, anxiety and personality traits such as neuroticism, which often lead to negative outcomes. In contrast, other studies have highlighted potential positive outcomes associated with high-Internet use. Therefore, universities should take into consideration increasing trends of IA and address IA vulnerabilities using early intervention and prevention approaches. This would lead to further research in developing preventative face-to-face and Internet-delivered intervention programs targeting students vulnerable to developing IA.

Introduction

Over the past twenty years the Internet has increasingly become an important portal for exchanging information, socialising and education purposes (Kaess, et al., 2014) and as a result, it has become an integral lifestyle commodity changing the way people communicate with each other (Yuan, Qui, Liu & Tian, 2011). This has been received as a positive trend due to the rise in connectivity across the globe (Bergmark, Bergmark & Findahl, 2011). However, increasing overuse of the Internet has been considered an emerging disorder - Internet Addiction (American Psychiatric Association [APA], 2013). Internet Addiction (IA) is defined as one's inability to control Internet use, leading to functional difficulties in multiple domains including psychological, social, and occupational (Yuan, et al., 2011). As Internet use has become an essential part of academic and social aspects of university life, it has been suggested that some students may have an increased vulnerability to developing IA (Hinsch & Sheldon, 2013). This paper aims to critically explore the literature surrounding IA with the following objectives: (a) define and compare IA to other types of Addictive Disorders; and (b) examine evidence for IA amongst university students. It will be highlighted that in order to respond to university students' IA vulnerabilities, further research and the development of preventative intervention programs are required.

Context and background

To date, research on IA has yet to reach agreement on a definition or a set of unified diagnostic criteria. IA has been represented in the literature as Compulsive Internet Use (Meerkerk, Van Den Eijnden, Vermulst & Garretsen, 2009), Internet Addictions Disorder, Problematic Internet Use (Yuan, et al., 2011) and Pathological Internet Use (Kaess, et al., 2014). IA has also been known as Gaming Addiction (APA, 2013) suggesting that the addiction is linked to the activities on the Internet, not the Internet itself (Meerkerk, et al., 2009). Therefore, IA, viewed as an overarching term, refers to the overuse of significantly diverse Internet activities such as gaming, on-line pornography, instant messaging, emails, search engines, social media (Block, 2008), as well as less well-researched activities including social applications on phones and tablets (Hinsch & Sheldon, 2013). IA is not a diagnosable condition in the Diagnostic and Statistical Manual of Mental Health Disorders fifth edition (DSM-5) as identified and agreed diagnostic criteria are still inconclusive at this stage (APA, 2013). The literature has proposed a number of diverse criteria (Young, 2004). Amongst these, one common criterion for IA emphasises excessive preoccupation and engagement with Internet activity resulting in negative consequences, including neglect of personal needs

leading to poor achievements (Block, 2008). Another criterion of particular relevance to university students is that of procrastination on the Internet, taking valuable time away from studying and leading to poor academic performance (Young, 2004). Despite disagreement regarding terminology and its criteria, the potential for IA is acknowledged in the current literature.

Research suggests there are parallels between IA and other Addictive Disorders (Brand, Laier & Young, 2014). As with many Addictive Disorders, withdrawal and tolerance are key criteria in diagnosing IA (Akers, 1991). Research has shown that withdrawal patterns exist in individuals with IA (Charlton, 2002) and more recently it has been argued that tolerance in IA is characterised by a need for increased technological capabilities and Internet speed such as continually investing in better hardware/software equipment (Block, 2008). Additionally, brain-imaging research suggests there are similarities in psychological and biological mechanisms comparable to acknowledged DSM-5 Addictive Disorders, along with a reduction in cognitive control and information processing abilities (Yuan, et al., 2011). Thus, evidence for addiction has been sought in the way the brain responds to a certain behaviour or chemical (Joffe, Grueter & Grueter, 2014). Dopamine and norepinephrine dependent and independent pathways interplay in responding to addiction patterns (Weinshenker & Schroeder 2007; Young, 1998, as cited in Charlton, 2002). For example, it has been found that, just like in chemical addictions, when people engage in Internet based activities such as video game playing or gambling, the release of neurotransmitters increases in the nucleus accumbens, which respond to pleasure and motivation (Joffe, Grueter & Grueter, 2014; Jurd, 1996; Kalat, 2011). Therefore cumulatively, the research identifies IA as similar to other well-established Addictive Disorders, producing activation of reward mechanisms, cravings and cue-response (Yuan, et al., 2011) suggesting it is a valid construct (Charlton, 2002; Meerkerk, et al., 2009). Unlike other Addictive Disorders such as opioid use disorder (Charlton, 2002), high levels of the addictive behaviour associated with IA (Internet use), is encouraged. Accessibility to the Internet continues to increase world-wide. As participation in Internet use continues to widen, more people are likely to be affected by IA.

Empirical studies on IA are limited (Wang, 2001). However, IA is rapidly becoming a serious mental-health problem in many countries around the world (Brand, et al., 2014), with suggestions that anywhere between six percent and ten percent of Internet users in the United States of America (USA) suffer from IA (Young, 2004; Davidson, 2008). In South Korea, IA is considered to be a significant public health problem affecting approximately 210,000 children between the ages of six and nineteen, which is equivalent to 21% of this age group (Block, 2008). The Chinese government has raised similar concerns for young people due to the high Internet use amongst young people in China (APA, 2013). There is as yet little research into IA within Australia and New Zealand. However, one international study by Porter, Starcevic, Berle and Fenech (2010) on 1,945 people aged fourteen years old and above included Australian and New Zealand participants, who represented 18.3% and 5% respectively of the whole sample. In this study, 11.5% of the Australian sample and 9% of the New Zealand sample met the criteria for problematic Internet use. Block (2008) contends that IA has the potential to affect a large number of young people globally, who tend to be high-users of the Internet.

Internet addiction amongst university students

The rapid expansion of applications of Internet use and diversification of its use in universities has encouraged students to become high-Internet users (Hinsch & Sheldon, 2013). Hinsch and Sheldon (2013) found that 94% of undergraduate students reported spending a minimum of one hour per day on the Internet in 2009, which is a marked increase compared with 77% in 2002. In particular, Facebook has been identified as being used as a study and social tool by students to define themselves, connect, interact and exchange information (Farooqi, et al., 2013). Internet use and its applications have been argued to be a positive lifestyle commodity (Bergmark, et al., 2011) and an integral part of most university curricula (Fife, 2010). However, there is empirical evidence

indicating the presence of IA amongst students in universities in several parts of the world: USA (Christakis, Moreno, Jelenchick, Myaing & Zhou, 2011), Asia (Dong, Wang, Yang & Zhou, 2013; Yang, Sato, Yamawaki & Miyata, 2013) and the Middle East (Ghamari, Mohammadbeigi, Mohammadsalehi & Hashiani, 2011). Estimates of prevalence within populations are difficult to obtain due to diversity in the student population and limited research at present (Christakis, et al., 2011).

As Internet use is necessary for the majority of university students, it is important to examine IA aetiology and associations along with other factors. A recent meta-analysis reported an association between IA and substance abuse, insomnia, depression and anxiety disorders in the general population (Ho, et al., 2014). Research amongst university students identified some comorbid conditions with IA that parallel Ho et al.'s meta-analysis findings (Lee, Han, Kim & Renshaw, 2013; Orsal, Orsal, Unsal & Ozalp, 2013). Thus, IA amongst university students has been linked to a number of comorbidities.

However, the question of directionality of the relationship between IA and comorbid conditions as well as other influential factors is not clear in the literature. A significantly high relationship has been found between poor mental health and wellbeing, and IA amongst university students (Orsal, et al., 2013). Furthermore, other factors that have been shown to impact upon university students' mental health may play a role, including problematic lifestyle choices, sleep issues, alcohol or other drug use (Zochil, 2013). For example, sleep issues are common amongst university students (Cheng, et al., 2012). It would not be surprising if insomnia contributes to IA in university students, with the added problem that the associated excessive fatigue leads to poor academic performance (Young, 2004). Additionally, it has been shown that over ten percent of university students have an increased risk of alcohol and other drug misuse (Vivekananda, Telley & Trethowan, 2011). It has been proposed that substance abuse increases vulnerability to IA (Lee, et al., 2013). The relationship between IA and related factors is not self-evident (Thorsteinsson & Davey, 2014) therefore it would be beneficial to incorporate potential comorbid disorders in future research in order to provide an insight into university students' IA vulnerabilities and risk factors.

The association between IA and other mental-health problems in university students suggests that IA may also be related to impaired functioning in a number of ways. In a recent study, Brand et al. (2014) used psychological and personality testing to demonstrate that individuals had an increased risk for IA if they had poor coping skills as well as cognitive expectations that the Internet could increase mood positively or reduce it negatively. Additionally, a study on excessive Facebook use showed that university students with IA had poorer academic performance and overall decreased wellbeing compared to those without IA; however, this latter study was limited to females (Sharifah, Siti, Jusang & Mohd, 2011) and hence, further research that enables gender comparisons is recommended. Moreover, a recent study with Turkish university students attempted to explore whether IA negatively predicts mental health problems such as depression, and well-being issues such as loneliness (Çardak, 2013). Multiple regression analyses suggested that diminished impulse control, associated with IA, negatively affected students' psychological well-being (Çardak, 2013). Although the Turkish type of Online Cognition Scale was culturally appropriate and had high Internal consistency (α = .91), the loneliness/depression six-item subscale's reliability coefficient was low (α = .60; Çardak, 2013). Future replication of this research should include a more reliable mental health scale to strengthen these findings. Hinsch and Sheldon (2013) recently reported that university students who met criteria for IA had reduced procrastination scores and increased life satisfaction scores from pre-test to post-test after being asked to decrease Internet use. All participants belonged to the faculty of psychology; thus, were not representative of the broader student population, nor was there any data provided in the article to differentiate between on-campus or distance education students. Nevertheless, these combined findings have highlighted potential negative consequences of IA.

However, the literature indicates some mixed findings in relation to high-Internet use in general (Young, 2004). It has been argued that for some people addictions may not be purely negative (Griffiths, 1996). Emerging literature also suggests that high-Internet use does not always lead to problems, as there are also positives associated with Internet use (Lampe, Wohn, Vitak, Ellison & Wash, 2011; Thorsteinsson & Davey, 2014). Despite a small sample size and potential sample biases, Thorsteinsson and Davey (2014) found that increasing Internet use for the purpose of socialisation contributed to a high-support satisfaction, which in turn improved mental health in teenagers. Similarly, a positive association has been found between Facebook use and organised study groups as well as course engagement, explaining 35% of the variance in Facebook use for collaboration inclination amongst university students (Lampe, et al., 2011). However, in this study, Internet use was self-monitored and based on participants' reports only, which may highlight some bias. Nevertheless, these two studies provide a wider perspective to the IA evidence examined to this point, suggesting that high-Internet use in itself does not necessarily result in negative consequences (Lampe, et al., 2011). Additionally, the study by Brand et al. (2014) suggested that some individuals were less likely to engage in problematic Internet use if they had high coping skills and no expectation that the Internet could increase positive mood or reduce negative mood. It appears that the predictors of IA are still unclear (Thorsteinsson & Davey, 2014), in particular in terms of the interaction of factors that contribute to students' wellbeing and academic performance. It appears that some students respond positively to high Internet use while others are hindered by this, therefore further research is needed to provide insight into factors contributing to IA.

More longitudinal studies could provide some answers to the question of the directionality of the relationship between IA, comorbid conditions and other potential factors. For example, a longitudinal study of IA with Chinese university students was conducted using Young's Online Internet Addiction Test (Dong, et al., 2013). University students who scored high on neuroticism, psychoticism and marked immaturity on the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) at the start of university were more likely to show IA symptomatology at follow-up two-years later, suggesting that these personality traits may act as precursors to IA. However, although sample size was quite large (n = 868), analyses were only carried out on a small subset divided into two groups of 49 participants each and an explanation was not provided in the article for this discrepancy. The first group included participants who did not meet the criteria for IA while the second group met the criteria for IA at follow-up. This second group was comprised of mostly males (88%) which raises two possibilities: firstly, there may be a confounding variable to explain this result, or secondly, gender is another potential risk factor, with males being more vulnerable to IA than females. However, this was not addressed in the study (Dong, et al., 2013).

Developing prevention intervention programs

The wellbeing and mental health of university students have significant implications on academic performance, hence, programs, to prevent, identify and intervene in any mental health and wellbeing concerns, have been and are continuing to be developed by a number of universities (Andrews & Chung, 2011; Vivekananda, et al, 2011). Further understanding of the components of IA is required in order to design IA prevention and intervention programs. In particular, investigations into university student use of social media such as Facebook and other similar interfaces, holds great potential to understand students' needs and engage them more effectively (Jenness, 2011). For example, the time of transition to university is known to be a very stressful one for many commencing students. Introducing and connecting international students with other students prior to their arrival is one important way of positively managing their expectations and easing their adjustment into a new university environment, by decreasing isolation and ameliorating other vulnerability issues (Mallett, 2011). Preventative intervention programs that are tailored to the needs of different student cohorts may help to reduce vulnerability to IA through reducing isolation and increasing connectedness and engagement with the university and fellow students.

As IA is not an identified DSM-5 disorder, it is important to look to other established disorders in order to identify how early studies on preventative intervention programs can help those with IA and how the Internet may be beneficial for recruitment and treatment. There are Internet-based interventions available for the general population for a variety of common mental health disorders (Andersson & Titov, 2014). Youn et al. (2013) explored the practicality of using social media for screening university students for depression and offering psycho-education. Of those who screened positive for depression, some were already receiving treatment. However, despite this, psycho-education alone was shown to be insufficient to fully engage a university student population. This study demonstrated the ease and feasibility of using social media for screening those with mental illness, comorbid to IA, such as depression (Youn, et al., 2013). Since university students with IA are by definition high-Internet users, looking at intervention programs that target anxiety and depression via an integration of face-to-face and Internet-delivered cognitive-behavioural therapy could offer wider access to intervention (Titov, Dear & Andersson, 2014). Additionally, the study by Brand et al. (2014) suggested a cognitive component to the development of IA associated with individuals' coping styles; thus cognitive-behavioural therapy has been proposed to improve faulty thinking, reduce IA symptoms, and engage individuals in their recovery. Further research in engaging students with IA in treatment programs is required to understand IA's rapid growth (Young, 2004) and the issue of directionality with IA identified comorbidities.

Conclusion

IA has been observed as an emerging phenomenon amongst high-Internet-using populations, including university students. Behaviours expected of university students encourage high-Internet use in their studies as well as socially. If there is presence of identified comorbid conditions and personality traits students may be more susceptible to developing IA. Further longitudinal studies may provide an answer to address the directionality issue associated with IA and related conditions. High-Internet use has been found to be associated with both positive and negative outcomes for students. Universities may benefit from exploring mitigating factors in the development of IA, to help to ensure that the required Internet use for students results in positive benefits rather than negative outcomes for students.

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