

Examination of the Relationship between Online  
Cognition, Predictor Variables of Psychosocial Well-  
Being and Personality Traits.

Alan Shinkins

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Supervisor: Dr. John Hyland

Programme Leader: Pauline Hyland

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Department of Psychology

Dublin Business School

Student Number: 10050194

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## Abstract

The aim of the present study is to investigate the relationship between problematic Internet use, online cognitive behavioural aspects and factors of psychosocial well-being in terms of gender through predictor variables life satisfaction, loneliness, impulsiveness, and personality traits (extraversion, neuroticism and psychoticism). A cross-sectional correlational study design was used and through a self-selection paradigm, a viable sample size of 130 participants (40 male, 90 female) completed an online survey questionnaire which was created on Google Docs culminating in a battery of psychometric tests. The Online Cognition Scale, Satisfaction With Life Scale, Barratt Impulsiveness Scale, UCLA Loneliness Scale and the Eysenck Personality Questionnaire Revised – Abbreviated Form were employed in the collection of data. Life satisfaction, loneliness, extraversion, neuroticism and psychoticism were found to be meaningful predictors of problematic Internet use. Improved definitions of problematic Internet use and empirically tested measures would support more accurate analysis of problematic Internet use in future research.

*Keywords: Internet, Problematic Internet use, personality traits, life satisfaction, loneliness, impulsiveness, online cognition, psychosocial well-being*

## Introduction

The Internet and social media have become a vital aspect in today's society. Millions of people are connected every day just through the click of a button. While moderate Internet use can be beneficial, it has been found that overuse can have a negative impact on the users overall health and wellbeing, however much of the research is still incomplete. The Internet is defined as the worldwide interconnection of individual networks operated by government, industry, academia, and private parties. Originally, the Internet served to interconnect laboratories engaged in government research, and since 1994 it has been expanded to serve millions of users and a multitude of purposes in all parts of the world. The Internet continues to be the most democratic of all the mass media and as of December 2014, has more than 3,079,339,857 users worldwide (Internet Growth Statistics, 2014).

Broad survey studies confirm that Internet use continues to rise and that previously cited gaps based on age, gender, technology access and socioeconomic status, are quickly disappearing (Fallows, 2004; Ha, & Hwang, 2014; Lenhart, Madden, Macgill, & Smith, 2007; Madden, Fox, Smith, & Vitak, 2007; Nie, & Erbring, 2000). From a psychological perspective, the Internet has become a major vehicle for interpersonal communication that can significantly affect people's decisions, behaviours, attitudes and emotions (Barak, 2008). Its existence has ushered the emergence of a virtual social environment in which people can meet, negotiate, collaborate and exchange goals and information (Cabral, 2011; Leung, 2006; Leung & Lee, 2012). The phenomenon of cyberspace, not just as a technical device but as an entity, has reduced the barriers of geographical distance and indigenous cultures (Barak, 2008). For the majority of individuals the Internet represents an incredible information tool and unquestionable opportunity for social connectedness, self-education, economic

betterment and freedom from inhibitions that bound personal development (Guadagno, & Cialdini, 2002, 2005, 2007; Young & de Abreu, 2010).

In contemporary society approximately 40% of the world population is online (Kuss, Griffiths, Karila & Billieux, 2014). Furthermore, global Internet usage has grown nearly six-fold over the last decade, with 96% of Internet users in Korea using high-speed Internet connections in comparison to 78% in the UK, and 56% in the USA (International Telecommunication Union, 2012; 2013). Compared to Internet access in 2000, the USA has more than doubled its usage, while mobile Internet use has increased substantially up to 2011 (The Nielson Company, 2012), indicating that Internet use via different hardware has become a highly prevalent activity for both adolescents and adults (Kuss et al., 2014; Moreno, Jelenchik, Cox, Young, & Christakis, 2011). From a global perspective, *Google* is the most popular online destination, closely followed by the social network site *Facebook* (The Nielson Company, 2012; Peluchette, & Karl, 2008; Rouis, 2012). In 2012, children and adolescents in Australia spent on average of 24 hours online per month, compared with 6 hours for those aged 18-24 years, and more than 100 hours per month for 25-34 year olds (Kuss et al., 2014; The Nielson Company. Australian online landscape review, 2012). According to empirical research and systematic review of epidemiological research for the last decade on Internet addiction, this suggests that young adults are the most active Internet users as they spend approximately three hours online per day (Kuss et al., 2014; Liu, Liao, & Smith, 2012; Meerkerk, 2007).

## ***Literature Review***

***Overview of Research on Problematic Internet Use.*** The rapid proliferation of the Internet and social media, concurrent changes in communication and enhanced immersion are undergoing continual growth defined by the wants of the user (Bergmark, Bergmark, & Findahl, 2011; Cabral, 2011). Paralleling the growth of Internet use in recent years, various forms of computer-mediated communication have become very popular sources of interpersonal interactions (Huang, 2010; Huang et al., 2009; Power & Kirwan, 2013; Rice & Markey, 2009; Walther, 2011). With the ubiquitous nature of the Internet, combined with an ease of accessibility through a myriad of online communication and information based platforms, an underlying pervasiveness of risk has emerged (Blinka et al., 2014; Starcevic, 2010, 2013; Tsitsika et al., 2014). The relationship between psychosocial well-being and problematic Internet use has captured the attention of researchers over the years, particularly where compulsive and problematic Internet use shows negative influence on psychosocial and personality dimensions (Casale, Lecchi, & Fioravanti, 2014; Kormas, Critselis, Janikian, Kafetzis, & Tsitsika, 2011; Lent, 2004; Schwarz & Strack, 1999; Wang, Chen, & Chen, 2013).

The increasing popularity and frequency of Internet use has led to the emergence of clinical cases presenting abuse symptoms (King, Delfabbro, Griffiths, & Gradisar, 2011; Öztürk, Odabasioglu, Eraslan, Genç, & Kalyoncu, 2007). Since the 1980s, school counsellors were advised to take excessive use of video games seriously as it could result in “addiction” (Charlton, & Danforth, 2010; Soper & Miller, 1983). In 1996, the concept of *Internet Addiction Disorder* emerged for the first time, initially as a satirical hoax as a response to the

perceived 'pathologisation' of everyday behaviours (Goldberg, 1996). Goldberg understood the condition as analogous to substance dependence, as based on criteria in the DSM-IV (American Psychiatric Association, 1994). Based on this, the individual had to experience a minimum of three of the following symptoms over a period of twelve months: tolerance, withdrawal, lack of control, relapse, large amounts of time spent online, negative consequences, and continuation of use irrespective of problem awareness (American Psychiatric Association, 1994; Goldberg, 1996).

Following this initial proposal, Young (1996b) and Griffiths (1996) emerged as the pioneers of early research into Internet addiction and problematic Internet use as they were the first to scrutinise the phenomenon empirically. Young's (1996) research was influenced by the Internet addiction criteria which was modelled after the APA's substance dependence diagnosis (American Psychiatric Association, 1994). Griffiths (1996, 1997) also published case study accounts including both males and females. Following these initial case reports, Young (1998) was among the first to present findings from an exploratory survey comprising 396 dependent Internet users who endorsed a minimum of five out of eight criteria adapted from a diagnosis of pathological gambling (American Psychiatric Association, 1994), and 100 non-dependent Internet users (Kuss et al., 2014). On average, the dependent users spent eight times more hours online than the controls, and used chat rooms and MUDs or Multi-User Dungeons, the exclusively textual precursors of today's Massively Multiplayer Online Role-Playing Games (MMORPGs), more frequently (Griffiths, & Pontes, 2014; Kuss et al., 2014; Mortensen, 2006; Yee, 2006, 2006). These early studies can be seen as the beginning of empirical research into the area of problematic Internet use and internet addiction (kuss et al., 2014; Widyanto, Griffiths, & Brunnsden, 2011). The term Internet addiction has been adopted by researchers (Brand et al., 2014) as there appears to be some important parallels

between Internet addiction and other so-called behavioural addictions (Grant, Schreiber & Odlaug, 2013) and substance dependency (Griffiths, 2005; Meerkerk, Van Dan Eijnden, Vermulst & Garretsen, 2009).

The first scientific description of a young man who developed severe psychosocial problems due to his excessive Internet use was done by Young (1996). It was followed by a growing number of other single- and multiple-case studies (Griffiths, 2000). New studies across cultures and academic disciplines have focused on understanding this relatively new social phenomenon (Shaw, & Black, 2008; Tao et al., 2010; Young & de Abreu, 2010). Today, a relatively large literature exists on the phenomenology, the epidemiology for different countries, and comorbidity of problematic or pathological Internet use (Brand et al., 2014; Byun et al., 2009; Kaess et al., 2014; Spada, 2014; Winkler et al., 2013). According to Kuss and colleagues (2014), reported prevalence rates in the last few years differ as a consequence of different assessment tools, cut-offs and cultural effects, ranging from 0.8% in Italy to 26.7% in Hong Kong (Brand et al., 2014; Wallace, & Masiak, 2011; Wallace, 2014). Beard (2005) conceptualises problematic Internet use through an integration of the biopsychosocial model of addiction, biochemical, genetic, psychological, familial, environmental and cultural dynamics thus amalgamating a socio-cultural theory (Shaffer et al., 2004; Van Den Eijnden, Spijkerman, Vermulst, van Rooij, & Engels, 2010; Yu-yuan, 2007). For instance the Internet may turn into an addictive pursuit if used by individuals who wish to avoid family-related problems (Bulut Serin, 2011; Beard, 2005).

***Definition and Prevalence of Problematic Internet Use.*** A perusal of the literature reveals various names for problematic Internet use or Internet addiction, including cyberspace

addiction, Internet addiction disorder, online addiction, Net addiction, Internet addicted disorder, high Internet dependency and others (Choi, 2001; Davis, Flett, & Besser, 2002; Hur, 2006; Weinstein, & Lejoyeux, 2010). Among the terms used to describe the topic of problematic Internet use, *Internet addiction* appears to be the most used and recurring in the research literature and is considered synonymous with compulsive, pathological or problematic Internet use (Thatcher & Goolam, 2005; Soule, Shell, Kleen, 2003; Sim, Gentile, Bricolo, Serpelloni, & Gulamoydeen, 2012).

While Internet addiction has received attention from studies in various fields (Chou & Hsiao, 2000), no clear definition currently exists and conclusive results on little or no research could be found on defining problematic Internet use and Internet addiction. Use of terminology is broad and inconsistent and there are differing views amongst scholars about the nuances between the terms used to describe problematic Internet use and Internet addiction based behaviour (Siomos et al., 2012; Winkler et al., 2013). Some researchers have adapted *substance use disorder*, while others reference *pathological gambling* (Kaltiala-Heino, Lintonen & Rimpelä, 2004; Van Holst, Van Den Brink, Veltman, & Goudriaan, 2010), resulting in inconsistent definitions (Rücker, Akre, Berchtold, & Suris, 2015; Shapira et al., 2003; Yellowlees & Marks, 2007; Rice, 2006). Due to the complex multi-layered nature of the topic, many researchers do not provide a clear definition of problematic Internet use or a defined and absolute symptoms based nomenclature or nosology of Internet addiction (Kuss et al., 2014; Widyanto & McMurrin, 2004; Johansson & Göestam, 2004; Pratarelli & Brown, 2002). Beard (2005) defines Internet addiction with a holistic approach wherein,

“an individual is addicted when an individual’s psychological state, which includes both mental and emotional states, as well as their scholastic, occupational and social interactions, is impaired by the overuse of the medium” (Beard, 2005).

While this definition encapsulates a wider spectrum of the subject of problematic Internet use and Internet addiction, it must be noted that it does not totally encompass the underlying structure of the topic (Byun et al., 2009; Hinic, 2011; Kim, & Davis, 2009). Internet addiction has been “defined as an impulse-control disorder which does not involve an intoxicant” (Evren, Dalbudak, Evren, & Demirci, 2014; Fitzpatrick, 2008; Young, 1998, p. 238). According to Davis (2001), “Healthy Internet use” is the use of the Internet for an expressed purpose in a reasonable amount of time without cognitive or behavioural discomfort. Problematic Internet use is “a psychiatric condition which involves maladaptive thoughts and pathological behaviour” culminating in excessive time spent on various activities on the Internet to an extent that might have negative effects on the user’s physical and psychological health; social, academic, professional and marital relationships as well as other areas of life (Ceyhan, 2007; Hardie, & Yi-Tee, 2007; Young, 1997).. Problematic Internet use has been associated with increases in impulsivity and increases in social comfort while online (Choi et al., 2014; Davis, 2001; Young & Rogers, 1998).

The phenomenon of problematic Internet use has been described across current literature as being associated with a wide range of co-occurring psychiatric comorbidities alongside an array of dysfunctional behavioural patterns (Banjanin, Banjanin, Dimitrijevic & Pantic, 2015; Floros, Siomos, Stogiannidou, Giouzevas & Garyfallos, 2014; Kuss et al., 2014; Odaci & Çıkrıkçı, 2014). Additionally, problematic Internet use and Internet addiction based behaviour has been recently associated with low life satisfaction (Dhir, Chen &

Nieminen, 2015), low academic performance (Ceyhan, 2007; Dhir et al., 2015; Iskender, & Akin, 2010), less motivation to study (Reed & Reay, 2015), poorer physical health (Kelley & Gruber, 2012), social anxiety (Weinstein et al., 2015), attention deficit/hyperactivity disorder and depression (Sariyska, Reuter, Lachmann & Montag, 2015), poorer emotional wellbeing, higher impulsivity (Reed, Osborne, Romano & Truzoli, 2015), cognitive distortion (Lu & Yeo, 2015), deficient self-regulation (Gómez-Guadix, Villa-George, & Calvete, 2012; Gómez-Guadix, Calvete, Orue, Las Hayas, 2015), poorer family environment (Chng, Li, Liau & Khoo, 2015), higher mental distress (Al-Gamal, Alzayyat & Ahmad, 2015) and loneliness (Pontes, Griffiths & Patrão, 2014) among other negative psychological, biological and neuronal aspects (Pontes et al., 2015).

Problematic Internet use is a multidimensional syndrome that consists of cognitive, emotional, and behavioural symptoms that result in difficulties with managing one's offline life (Caplan, 2005, 2007; Davis, 2001; Morahan-Martin & Schumacher, 2003; Price, 2011). Although researchers still disagree on the scope, nature, aetiology and effects of problematic Internet use, the literature suggests that symptoms include using the Internet as a maladaptive mood regulator, compulsive use, a preference for online social interaction, cognitive preoccupation with the Internet, negative outcomes due to Internet use and social skill deficits (Caplan, 2005; Cash, Rae, Steel, & Winkler, 2012;). LaRose, Lin and Eastin (2003) argued that problematic Internet use involves going online to alleviate negative moods, "to relieve stress, loneliness, depression, or anxiety" (p. 231). Similarly, Spada, Langston, Nikcevic and Moneta (2008) suggest it is using the Internet to reduce negative emotional drives (Caplan et al., 2009).

According to Pontes and colleagues (2015), one of the most influential cognitive-behavioural approaches to analysing problematic Internet use was developed by Davis (2001). Davis' model of pathological Internet use was the first to clearly differentiate between specific pathological Internet use and generalised pathological Internet use. In Davis' model, maladaptive cognitions play an important role in the development and maintenance of pathological Internet use (Cools, & D'esposito, 2011; Durak & Senol-Durak, 2014; Kaliszewska-Czeremska, 2011). In order to describe the nature of the cognitive theory of pathological Internet use, Davis (2001) introduced concepts such as distal and proximal contributory causes. On one hand, distal causes may include pre-existing psychopathology (e.g. depression, social anxiety, substance dependence) and behavioural reinforcement through specific functions or applications of the Internet (i.e., provided by the Internet itself throughout the experience of new functions and situational cues that contribute to conditioned responses). On the other hand, proximal causes may involve maladaptive cognitions that are seen as a sufficient condition with the potential to lead to both generalised multidimensional behavioural patterns of pathological Internet use and specific pathological Internet use and also cause the set of symptoms associated with pathological Internet use (Pawlikowski et al., 2014; Pontes et al., 2015; Young, 1999, 1999, 1998a, 1996a).

A study by Morahan-Martin and Schumacher (2000) found that interpersonal uses of the Internet differentiated those with problematic use from those with less problematic use. Morahan-Martin explains "there is a growing consensus that the unique social interactions made possible by the Internet play a major role in the development of Internet abuse" (2007, p. 355). As noted earlier, those who report negative outcomes due to their Internet use are more likely to use the Internet for interpersonal activities (e.g., chatrooms, interactive gaming and instant messaging etc.) and to go online to meet people, form relationships, and seek

emotional support (Milani, Osualdella, & Di Blasio, 2009; Morahan-Martin, 2007). Additionally, Caplan (2003, 2005a, 2005b) found that a preference for online social interaction, over face-to-face conversation, was a significant predictor of compulsive Internet use and of the extent to which individuals reported experiencing negative outcomes due to such use (Bernardi, & Pallanti, 2009; Caplan et al., 2009; Papacharissi, Z., & Rubin, 2000).

Davis (2001) argued that generalised pathological Internet use involves spending abnormal amounts of time on the Internet, either wasting time with no direct purpose and/or spending excessive amounts of time in online chat rooms (Beutel et al., 2011; Peris et al., 2002). Thus, procrastination is also assumed to play an important role in both the development and maintenance of generalised pathological Internet use (Thatcher, Wretschko, & Fridjhon, 2008). In this model, symptoms of pathological Internet use primarily derive from maladaptive cognitions. These cognitive symptoms may include obsessive thoughts about the Internet, diminished impulse control, inability to cease Internet use, as well as generalised feelings that the Internet is the only place where individuals feel good about themselves (Davis, 2001; Young, 2007, 2008, 2011, 2013). Other consequent symptoms may include thinking about the Internet while offline, anticipating future time online, decreasing interest in other activities or hobbies, and social isolation (Davis, 2001).

***Loneliness and problematic Internet Use.*** Loneliness has been defined as an unpleasant experience that derives from important deficiencies in a person's network of social relationships (Jones, Hobbs, & Hockenbury, 1982; Peplau & Perlman, 1982). Feelings of loneliness may result from an unfulfilled desire to have friends, a gap between actual and desired social status, and a lack of affective bonding. Thus, loneliness is a complex emotion

that is heavily dependent on peer influences (Bauminger & Kasari, 2000; Dill, & Anderson, 1999; Stevens & Morris, 2007).

According to Odacı and Kalkan (2010) problematic Internet use is significantly correlated with loneliness and levels of dating anxiety (Kalwar, Heikkinen & Porra, 2010; Odacı, & Kalkan, 2010; Odacı, & Çıkrıkçı, 2014). Similar results have been obtained in various other studies on the subject (Costabile, & Spears, 2012; Garden & Rettew, 2006; Pontes, Griffiths, & Patrão, 2014). Research has shown a positive correlation between problematic Internet use and shyness, loneliness and avoiding social relations (Ceyhan & Ceyhan, 2008; Ebeling-Witte, Frank, & Lester, 2007; Lavin, Yuen, Weinman, & Kozak, 2004; Mittal, Tessner, & Walker, 2007; Parks & Roberts, 1998; Sheeks, & Birchmeier, 2007; Ward, & Tracey, 2004).

Loneliness has been reported to be greater in adolescence than at other times (Brage et al., 1993; Medora & Woodward, 1986) and has a correlation with a low level of peer acceptance (Sletta, Valas, Skaalvik, & Sobstad, 1996), peer rejection (Cassidy & Asher, 1992; Rotenberg, Bartley, & Toivonen, 1997) and alienation from society (Anderson & Harvey, 1988; Page & Cole, 1991). In addition, a negative correlation between secure bonding established between parents and other individuals at this time and loneliness (DiTommaso, Brannen-McNulty, Ross, & Burgess, 2003; Lin, Lin, & Wu, 2009; Wiseman, Mayselless, & Saharabany, 2006), failure in relations with family and friends and a non-functional relationship style may lead individuals toward online relationships with an “acceptable character.”

According to Pantic (2014), heavy users of the Internet and social media sites tend to have more feelings of depression and loneliness. Viewing peoples' profiles on social media may give users an impression that others are happier than they appear to be therefore presenting a distortion of reality and causing many to feel vicariously left out and dissatisfied. Often, this can manifest into depression. Excessive use of social media may also increase stress levels (Oswald et al., 2006; Yan, Li, & Sui, 2014). The Internet allows it's users to be constantly connected and when taken away, many feel anxious and stressed (Schneider, Rench, Lyons, & Riffle, 2012; Ybarra, Alexander, & Mitchell, 2005).

Loneliness, due to a failure to establish close and meaningful relationships with people around or existing relations being at an insufficient level and described as a painful emotion (Ang, Chong, Chye, & Huan, 2012; DiTommaso & Spinner, 1997; Nelson-Jones, 1996), is linked to a person's negative impressions of themselves and others. These negative impressions stimulate feelings of self-dislike in the adolescent; individuals with a high level of loneliness having low self-esteem and being pessimistic in social relations (Man & Hamid, 1998; Nurmi & Salmela-Aro, 1997) may cause them to avoid other people and turn to cyber relationships (Campbell, Cumming, & Hughes, 2006; Junghyun, LaRose, & Wei, 2009; Kuss, van Rooij, Shorter, Griffiths, & van de Mheen, 2013). According to Morahan-Martin and Schumacher (2000), the fact that individuals can establish control in relationships established online also reduces social anxiety.

***Personality Traits and Problematic Internet Use.*** Personality is a stable set of characteristics and tendencies that determine peoples' commonalities and differences in thoughts, feelings, and actions (Maddi 1989; Pervin, & John, 2001). When any behaviour is

classified as excessive then a separate question arises as to whether the underlying personality structure contributes decisively to its origins (Floros & Simos, 2014; Ge, Se, & Zhang, 2014). There is however a major methodological hurdle; the term ‘personality’ includes a great many theoretical models, quite often at odds with one another, representing partial views of an intrinsic totality (Millon, Millon, Meagher, Grossman, & Ramnath, 2012).

The field of personality theory that has been applied more in excessive Internet use research is the one comprised of various trait and factorial perspectives (Floros & Siomos, 2014). Traits are single dimensions of individual differences expressed consistently across time and pervasively across situations (Millon et al., 2012; Orchard, & Fullwood, 2010). Various models have been proposed each with its own set of rules for grouping specific constellations of different responses to questions considered revealing of each trait (Eysenck, 1991, 1993, 1997; Eysenck & Eysenck, 1991, 1992; McCrae, & Costa, 1999).

Research on the link between personality attributes and various aspects of excessive Internet use has so far resulted in surprisingly consistent results, considering the complexity of researching a phenomenon without a concise definition that includes multiple and diverse behaviours (Amichai-Hamburger, 2007; Chen, Ross, & Yang, 2011; Li, & Deng, 2013). Various trait personality theories have featured prominently in research design (Eysenck, Eysenck & Barrett, 1985; Gray, 1981, 1991; McCrea & Costa, 1985), while several neurobiological studies have been conducted recently, increasing the validity of the notion to include online addictive phenomena in the psychiatric taxonomies (Floros & Siomos, 2014; Pang et al., 2010).

*Neuroticism and Problematic Internet Use.* Characteristics of Neuroticism involve anxiety, hopelessness, depression, pessimism and feeling vulnerable (McCrea & Costa, 1999). Neurotics tend to be worrisome and insecure (Barrick & Mount, 1991). Though general Internet usage could expose such individuals to circumstances that could trigger feelings of sadness or pessimism, on the other hand it provides sources of information that could alleviate anxiety (Mark & Ganzach, 2014). Therefore it is expected that there is a positive relation of neuroticism with general Internet activity. In terms of communication, on the one hand, Amichai-Hamburger and colleagues (2002) propose the notion that neurotics put the “real me” on the Internet and thus they would engage in more online interaction. Yet, when communicating online, where social cues are minimal and where the ambiguity could be interpreted in a pessimistic way, research indicates neurotics to be less likely to engage in online communication (Mark & Ganzach, 2014). Because of their pessimistic nature it is also expected that neurotics would be less likely to engage in online economic activity such as purchasing or banking, where online malicious behaviour is possible. Neurotics may seek ways to reduce anxiety through online learning; therefore research indicates a positive relation with academic activities (Mark & Ganzach, 2014; Montag, Jurkiewicz, & Reuter, 2010).

It seems likely that the environment created by computer-mediated communication encourages introverts and neurotic individuals to feel more at ease when conversing. Introverted and neurotic individuals might feel at ease when interacting via computer-mediated communication because it provides a sense of anonymity (Mottram, & Fleming, 2009; Rice & Markey, 2009). These individuals might also be attracted to the substantial control of the interaction afforded by computer-mediated communication which allows a

person to respond at their own leisure, the ability to edit what is said, and the capability to simply end the interaction at any time (Mitchell, Lebow, Uribe, Grathouse, & Shoger, 2011).

According to Mark and Ganzach (2014) neuroticism has been found to be positively related to online communication as neurotics seem to prefer engaging in academic activities online. Due to their tendency to feel anxious perhaps neurotics may feel that online learning environments would not be stressful as it enables learning in a private environment (often) at one's own pace. It is considered that those high in neuroticism use the Internet frequently, mostly to avoid loneliness (e.g. Butt & Phillips, 2008; Amichai-Hamburger & Ben Artzi, 2003).

The loneliness theory is also supported by research demonstrating modest correlations with the social use of Facebook ( $r = .08$ ; Ryan & Xenos, 2011) and the Internet more generally ( $r = .57$ ; Amichai-Hamburger & Ben-Artzi, 2000). Amichai-Hamburger and Ben-Artzi (2003) found high levels of neuroticism in females which was correlated with social usage of the Internet ( $r = .32$ ). In the same study, a negative relationship was reported between neuroticism and use of the Internet for informational purposes ( $r = -.27$ ). It may thus be hypothesised that those who score highly on neuroticism will use social media more often, primarily for socialising (Hughes, Rowe, Batey, & Lee, 2012).

According to research, high neuroticism was positively related with the use of social services of the Internet (Amiel & Sargent, 2004), and non-neurotic extraverts prefer face-to-face contact, whereas neurotic introverts prefer Internet communication in several interpersonal communication situations (Karamaker, 2005). Neuroticism is characterised by

anxiety; thus, a neurotic, especially an introverted neurotic, may experience communication anxiety in face-to-face environments. The Internet environment is less anxiety-arousing due to such characteristics as the lack of social cues and the possibility to choose the time for sending and receiving messages (Tosun & Lajunen, 2009, 2010).

The relationship between psychosocial well-being and problematic Internet use has captured the attention of researchers over the years (Morahan-Martin, 2008), particularly where compulsive and problematic Internet use shows negative influence on psychosocial and personality dimensions (Mark & Ganzach, 2014). Researchers have sought to learn more about problematic Internet use (Morahan-Martin, 2007, 2008; Widyanto & Griffiths, 2007) and one of the most consistent themes to emerge from the relevant literature over the last decade is that individuals who report negative outcomes associated with their Internet use appear to be especially drawn to its interpersonal functions (Caplan, 2002, 2003; Caplan, Williams & Yee, 2009; Chak & Leung, 2004; McKenna & Bargh, 2000; Morahan-Martin & Schumacher, 2000, 2003; van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engles, 2008; Young, 1998; Young & Rogers, 1998).

Current literature has highlighted that problematic Internet use is associated with low life satisfaction, social anxiety, poorer emotional wellbeing, higher impulsivity and loneliness (Kim, LaRose & Peng, 2009; Valkenburg & Peter 2007, 2007) among other negative psychological aspects (Kuss, & Griffiths, 2011, 2012; Pontes, Kuss & Griffiths, 2015). Pontes, Kuss and Griffiths (2015) highlight that problematic Internet use is considered to be a serious issue by those working in the field, albeit not yet officially recognised as a disorder. In relation to the definition and characterisation of problematic Internet use, it is clear that

uncertainties regarding its status and criteria as to what constitutes problematic Internet use have not yet reached consensus (Pontes et al., 2015; Van Rooij & Prause, 2014).

### ***Rationale for the Current Study and Hypotheses***

It is clear from the literature that the Internet, an important modern means of obtaining information and establishing communication with others, has become an increasingly essential element of every day existence. Although Internet use improves certain aspects of daily life, research indicates that it can become problematic in the event of non-functional or maladaptive use. The topic has generated a great deal of discussion, particularly in relation to how the phenomenon of problematic Internet use can be defined conceptually as well as the many nosological, aetiological and methodological limitations. Debate and research into whether Internet addiction based behaviour and problematic Internet use are a cause or effect are continuing (Bulut Serin, 2011; Kuss et al., 2014; Laconi et al., 2014; Odaci & Kalkan, 2010; Pontes et al., 2015; Winkler, Dörsing, Rief, Shen, & Glombiewski, 2013).

The aim of the present study, therefore, is to contribute to the body of literature on problematic Internet use and develop insight into potential areas for future investigation. This quantitative study investigates the relationship between problematic Internet use among

participants in terms of gender, online cognitive behavioural aspects and factors of psychosocial well-being through correlational predictor variables such as life satisfaction, loneliness, impulsiveness and personality traits (extraversion, neuroticism and psychoticism). Problematic Internet use will be measured through the prism of the Online Cognition Scale measure (Davis et al., 2002).

A cross-sectional design will be used in the present study, based on measures that include the Online Cognition Scale (Davis et al., 2002), the Satisfaction With Life Scale (Diener et al., 1985), the Barratt Impulsiveness Scale, version 11 (Patton, Stanford & Barrat, 1995), the UCLA Loneliness Scale (Russell, Peplau & Ferguson, 1978) and the Eysenck Personality Questionnaire Revised – Abbreviated Form (Francis, Brown & Philipchalk, 1992). Descriptive and inferential statistics will be utilised in data analysis using SPSS version 22 statistical analysis software. A significance level of 0.5 will be acceptable. T-test analysis will be used to assess whether there is significant differences in gender with regard to problematic Internet use. General Pearson's correlation coefficient analysis will be used in order to reveal significant correlations between criterion and predictor variables. Multiple regression analysis will then be implemented to examine potential correlations between predictor variables (neuroticism, extraversion, psychoticism, life satisfaction, loneliness and impulsiveness) and the criterion variable problematic Internet use.

Based on the literature reviewed, the following research questions are of particular interest: Does problematic Internet use among individuals show significant difference in terms of gender? Secondly, to what extent do personality traits (extraversion, Neuroticism

and psychoticism) life satisfaction, impulsiveness and loneliness variables predict the levels of online cognitive behavioural and problematic/maladaptive Internet use?

### **Hypotheses**

*H 1: There will be a linear positive correlation between problematic Internet use and Loneliness.*

*H 2: There will be a linear positive correlation between problematic Internet use and Neuroticism.*

## **Methodology**

### ***Participants***

A voluntary random sample population of a total of 133 respondents took part in the questionnaire, however 3 records were excluded due to incomplete data which meant a viable sample of 130 participants (N = 130) was used for the final analysis. Prior to survey distribution, information (research details, consent form and debrief) about the study was included with the online battery of questionnaires comprising the entire survey. Data was collected on participants who volunteered and gave consent to taking part.

A combination of a self-selection paradigm, convenience sampling and survey distribution methods through various online platforms was utilised in order to create a snowball effect to generate a sample population for the study. A voluntary heterogeneous sample of 130 participants (40 Male, 90 Female) took part in this research via an online and in-class hard copy survey questionnaire. Respondents were invited to complete the

questionnaire via a link created and hosted on the Internet survey tool Google Docs ([www.docs.google.com](http://www.docs.google.com)) which was posted through various public and college orientated online/social media platforms (Boards.ie, Facebook, DBS student Moodle Blog, DBS Psychology Society, DBS Film Society, NUIM Mental Health Society, NUIM Psychology Society, and Trinity Psychology Society). An in class hard copy pen and paper version of the survey questionnaire was distributed to a number of DBS undergraduate psychology students which they voluntarily completed. Data was collected over approximately a two month period.

A sample was acquired based on the demographic subgroup variables of gender, age, type of study (if student) and academic performance (if student) consisting of both students and non-students (general public). A total of 40 males (30.8%) and 90 females (69.2%) (Male = 40; Female = 90) took part in the questionnaire and 126 respondents gave their age. The majority of respondents were aged between 17 and 62 (Mean = 24.04; SD = 8.65). A total of 121 respondents specified their 'type of study' (Full-time = 106; Part-time = 5; Not applicable to me = 10). A total of 128 respondents specified their overall 'academic performance' (Below average = 4; Average = 40; Above average = 61; Very good = 19; Not applicable to me = 4). This study was of low risk and was passed by a committee for ethical approval.

## ***Design***

The current study is characteristically quantitative and descriptive while adopting a cross-sectional correlational research design in order to explore the relationship between the criterion variable problematic Internet use (which was globally measured through the

multidimensional prism of the online Cognition Scale) through predictor variables life satisfaction, loneliness, impulsiveness and personality traits (Extraversion, Neuroticism and Psychoticism). The data collected from the questionnaire was analysed and collated using SPSS version 22.

An independent samples t-test was carried out to assess whether there was significant differences in gender regarding problematic Internet use. General Pearson's correlation coefficient analysis and multiple regression analysis was used in order to reveal significant correlations between criterion and predictor variables.

## ***Materials***

The predictor variables Satisfaction With Life, Impulsiveness, Extraversion and Psychoticism were incorporated into the research design model of the present study and collectively included along with the study's current criterion variable Problematic Internet use and predictor variables Loneliness and Neuroticism in statistical analyses. For the purposes of this research, focus of details will be placed upon the specific measurement tools used for the current hypotheses of the present study while minimal relevant details will be given to the measurement tools used in data collection of the peripheral variables of the additional analysis.

Overall data was collected using the Online Cognition Scale (OCS) (Davis, Flett & Besser, 2002), the Satisfaction With Life Scale (SWLS) (Diener et al., 1985), the Barratt Impulsiveness Scale, version 11 (BIS-11) (Patton, Stanford & Barratt, 1995), the UCLA

Loneliness Scale (Russell, Peplau & Ferguson, 1978) and the Eysenck Personality Questionnaire Revised - Abbreviated Form (EPQR-A) (Francis, Brown & Philipchalk, 1992).

With regard to the personality constructs Extraversion, Neuroticism and Psychoticism, Eysenck conceptualised personality as three biologically-based independent sub-dimensions of temperament measured on a continuum (Eysenck & Eysenck, 1992; Tosun & Lajunen, 2009). Thus, data was collected on the three superfactor personality dimensions of the PEN model paradigm using the EPQR-A. The BIS-11 (reliability: Cronbach's alpha of .75) was used to assess the orthogonal construct of impulsiveness (appendix 8). The SWLS (reliability: Cronbach's alpha of .89) was used to measure the global cognitive judgements satisfaction with one's life (appendix 6).

Having been informed regarding voluntary participation, anonymity and consent participants completed a battery of self-report psychometric tests comprising the entire survey questionnaire which included a total of 119 items (see appendix 10 for the full questionnaire). The questionnaire was created in Google docs. The questionnaire consisted of demographic questions asking for gender, age, type of study (if student) and overall academic performance (4 items), questions on online cognitions in order to measure problematic Internet use focusing on cognitions rather than just behaviours (36 items), life satisfaction (5 items), the personality/behavioural construct of impulsiveness (30 items), loneliness (20 items) and personality traits specifically a tripartite questionnaire encompassing the Eysenckian personality dimensions extraversion, neuroticism and psychoticism (24 items).

*Problematic Internet Use measure – The Online Cognition Scale (OCS).* The original of the scale drawn up by Keser-Özcan and Buzlu (2005) studying validity and reliability in university student sampling with the aim of determining problematic Internet use was developed by Davis and colleagues (2002). The Online Cognition Scale (OCS) (appendix 5) is a self-administered 36-item questionnaire. The OCS is a theory driven and multidimensional measure of problematic Internet use. Items for the scale were drawn from symptoms of problematic Internet use, particularly focused on cognitions rather than behaviours (Davis, 2001), and also adapted from related measures of procrastination, depression, impulsivity and pathological gambling. Research applicability: the scale can be scored as a global measure of problematic Internet use.

Respondents are asked questions about their thoughts related to the Internet. Respondents rate the agreeableness of each item on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). OCS scores range from 36 to 252, with higher scores indicating higher levels of problematic Internet use. Items include statements such as “I often keep thinking about something I experienced online well after I have logged off”, “I get more respect online than in real life”, and “Using the Internet is a way to forget about the things I must do but really don’t want to”.

The OCS contains four subscales: loneliness/depression (6 items), diminished impulse control (10 items), social comfort (13 items), and distraction (7 items). It is widely used in research and has strong psychometric properties. The OCS has an internal consistency coefficient Cronbach’s alpha of 0.91 and items’ total reliability coefficients range between 0.17 and 0.66. Test-retest reliability (4 weeks) = 0.90. Validity: correlated with depression

(Beck's Depression Scale) and loneliness (UCLS Loneliness Scale) (Keser-Özcan and Buzlu, 2005, 2007). In the relationship between item variation and sub-group score variation, values range between 0.40 and 0.73.

Current study reliability: The OCS demonstrated high internal consistency as a total measure of problematic Internet use (reliability is high and satisfactory with a Cronbach's alpha of .94) and Cronbach's alpha for each of the four OCS dimensions: Social comfort/support sub-group scores is .86, loneliness/depression sub-group score is .69, reduced impulse control sub-group score is .86 and distraction sub-group score is .84. The OCS four factor model has a validity that is predictive, convergent and discriminate. Current study reliability of the OCS is consistent with previous research (Davis et al., 2002; Keser Ozcan & Buzlu, 2005; Odaci & Kalkan).

***Loneliness measure – UCLA Loneliness scale (UCLS-LS).*** The UCLA-Loneliness Scale (appendix 7), developed in 1978 by Russel, Peplau and Ferguson in order to measure individuals' general levels of loneliness showed high internal consistency with a coefficient alpha of .96 and a test-retest correlation over a two-month period of .73. The UCLA-LS consists of 20 (10 negative and 10 positive) statements to which responses are given on a 4-point scale ranging from 1 (never) to 4 (often). UCLA-LS scores range from 20 to 80, with higher scores indicating higher levels of loneliness. Demir (1989) determined that the scale had an internal consistency coefficient of 0.96, and, using the test-repeat technique, a reliability coefficient of 0.94. In terms of the validity of the scale using similar scales, the Beck Depression Inventory (BDI) and Multilateral Depression Scale Social Introversion (SI), the OCS exhibited a correlation of 0.77 with the BDI and 0.82 with the SI (Odaci & Kalkan,

2010). Current study reliability is consistent with previous research. The UCLA-LS demonstrated high internal consistency. Reliability is high and satisfactory with a Cronbach's alpha of .96.

Most research on loneliness has been based on one instrument, the UCLA-LS (Russell, Peplau & Cutrona, 1980; Russell et al., 1978), which has come to be viewed as the "standard" scale in the area (Shaver & Brennan, 1991). The UCLA-LS, developed by Russell, Peplau and Ferguson (1978), is a 20-item scale designed to measure one's subjective feelings of loneliness as well as feelings of social isolation. Participants rate each item as either O ("I often feel this way"), S ("I sometimes feel this way"), R ("I rarely feel this way"), N ("I never feel this way"). The measure has been revised twice since its first publication; once to create reverse scored items, and once to simplify the wording (Russell, Peplau & Ferguson, 1978; Russell, Peplau & Cutrona, 1980; Russell, 1996; Weeks, Michela, Peplau, & Bragg, 1980).

The UCLA-LS measures loneliness conceptualised as a unidimensional emotional response to a discrepancy between desired and achieved levels of social contact (Russell et al., 1980). The UCLA-LS has been used extensively in student populations (Corchoran & Fischer, 2000) and has demonstrated to be related to problematic Internet use in multiple studies (Kraut et al., 1998). Consistent with previous research, the UCLA-LS was highly reliable in the Davis and colleagues (2002) study (Cronbach's alpha = 0.88).

*Personality Traits measure (Extraversion, Neuroticism, Psychoticism and Lie Scale) – The Eysenck personality Questionnaire Revised – Abbreviated (EPQR-A).* The

Revised – Abbreviated version of the Eysenck Personality Questionnaire (EPQR-A) (appendix 9), developed by Francis, Brown and Philipchalk (1992), is a 24-item inventory consisting of four subscales of 6-items, each measuring the orthogonal dimensions of Extraversion, Neuroticism, Psychoticism and Lie Scale (a measure used to reflect social desirability) and created for use when time is limited (Forrest, Lewis & Shelvin, 2000). It is scored on a Yes (1)/No (0) format and possible scores can range between 0 – 6, with higher scores indicating higher levels of the personality trait. Sample questions include: “Do you often feel Lonely?” (item - 21: Neuroticism), “Do other people think of you as being very lively?” (item - 23: Extraversion), “Is it better to follow society’s rules than go your own way?” (item - 22: Psychoticism) and “Do you always practice what you preach?” (item - 24: Lie Scale).

The reliability of the EPQR-A subscales was demonstrated by computing levels of internal consistency. Satisfactory levels of internal consistency were found for the subscales of Extraversion (0.74 – 0.84), Neuroticism (0.70 – 0.77), and Lie scores (0.59 – 0.65). However, unsatisfactory levels were found for the psychoticism Scale (0.33 – 0.52). The concurrent validity of the EPQR-A subscales was assessed by examining the association with those of the original EPQ subscales (EPQ: Eysenck & Eysenck, 1975a, 1975b; EPQR-S: Eysenck, Eysenck & Barratt, 1985). Correlations between the two forms for the measures of extraversion, neuroticism and the Lie scale all ranged between 0.84 and 0.90. The considerably lower correlation between the psychoticism scales (0.33 – 0.52) “is consistent with the intention of the EPQR to modify the earlier form of this construct” (Francis et al., 1992, p. 447).

A problem emerges in relationship to the EPQR-A Psychoticism Scale where the alpha coefficients ranged between 0.33 and 0.52. This problem is shared among the samples used in a study by Francis and colleagues (1992), from which the abridged form was derived (Eysenck & Eysenck, 1976). Measures of psychoticism are a more recent addition to Eysenck's model of personality and the early forms suffered from a variety of psychometric faults (Bishop, 1977; Block, 1977). Data from Francis and colleagues (1992) demonstrate that the EPQR-A 6-item Psychoticism Scale is no less reliable than the EPQR-S 12-item scale.

Current study reliability: The EPQR-A demonstrated satisfactory internal consistency. It was found that the neuroticism subscale has high reliability and satisfactory internal consistency with Cronbach's alpha of .74. The extraversion subscale showed a high reliability and was satisfactory with Cronbach's alpha of .81. The psychoticism subscale showed a low reliability and a below ideal satisfactory level with a Cronbach's alpha of .42. The lie subscale showed satisfactory reliability with Cronbach's alpha of .66.

## ***Procedure***

Prior to survey distribution, information (research details, consent form and debrief) about the study was included with the online questionnaire. Data was collected on participants who volunteered and gave consent to taking part in the questionnaire through online and hard copy format.

When distributing the questionnaire through the in-class hard copy pen and paper method, participants entered the room where they were informed of the study. A copy of this questionnaire is provided in the appendices (appendix 10). An information sheet was attached to the front of the questionnaire booklet (appendices 1, 2, 3 and 4) where participants were made aware of confidentiality and that their answers would remain strictly anonymous. Participants were assured that the study was completely voluntary and they could withdraw from participation at any time. Both the author and supervisor contact details (appendix 1) was provided in the information sheet. Written instructions were given at the start of each psychometric test included in the questionnaire instructing the participants to score the level to which they agreed with each item.

Participants were advised that this quantitative research based study would involve exploring online cognition Internet use among participants, while also gauging the impact of correlational predictor variables of psychosocial well-being, cognitive behavioural Internet use and personality traits. Participants were told that data will be collected through an online psychometric paradigm and that both online and hard copy versions of the research survey questionnaire would take approximately 10 to 12 minutes to complete. When distributing in-class hard copy versions of the questionnaire to respondents the questionnaire booklet had a detachable page at the end which contained helplines such as Aware and the Samaritans (appendix 4). After the questionnaire was completed the author collected them from each participant and thanked them for taking part. The Statistical Package for the Social Sciences (SPSS) software version 22 was then used to analyse the data and test the relationships between the variables.

Upon clicking on the link to the online version of the questionnaire, respondents were taken to the introduction page which restated the research brief, as outlined on the cover pages of the research survey questionnaire. The introduction page then advised respondents that participation was anonymous, voluntary and confidential. Because individual participants could not be identified from any answers they provided, respondents were advised it would not be possible to withdraw from participation after the questionnaire had been submitted and, that by submitting the questionnaire, they were consenting to participate in the research. Participants were also advised that the data collected would be securely stored in electronic format on a password protected computer. After completion of the survey respondents were provided with a debrief form containing helpful details of interest and then were thanked for their participation.

## **Results**

### ***Descriptive Statistics***

The other factors measured (Satisfaction With Life, Impulsiveness, Extraversion and Psychoticism) were also considered and included in both the descriptive and inferential statistical analysis sections. These other factors are not specifically related to the hypotheses but are still peripheral and of interest to the present study due to significant research interest in the relevant literature on problematic Internet use

**Gender, age, type of study and academic performance statistics.** A heterogeneous sample of participants was acquired based on the demographic subgroup variables of gender, age, type of study (if student) and academic performance (if student) consisting of both students and non-students (general public). All statistics were computed on SPSS software version 22. Of the total sample (n = 130), 40 were male (30.8%) and 90 were female (69.2%). The results for gender are provided in table 1. Out of the total sample size 126 (96.9%) indicated their age. The majority of respondents who gave their age fall in the age group of 17 and 62 years (Mean = 24.04; SD = 8.65). The results for age are provided in table 2.

Table 1: *Frequency and Percent for Gender of Respondent*

	<b>Frequency</b>	<b>Percent</b>
<b>Male</b>	40	30.8
<b>Female</b>	90	69.2
<b>Total</b>	130	100.00

Table 2: *Frequency and Percent for Age of Respondent*

<b>Variable (Age)</b>	<b>Frequency</b>	<b>Percent</b>
17	1	.8
18	19	14.6
19	32	24.6
20	13	10.0
21	10	7.7
22	7	5.4
23	5	3.8
24	5	3.8
25	2	1.5
26	4	3.1
28	2	1.5
29	1	.8
30	4	3.1
31	3	2.3
32	2	1.5
33	3	2.3
34	2	1.5
36	1	.8
40	1	.8
41	1	.8
43	1	.8
44	1	.8
45	1	.8
49	1	.8

<b>52</b>	2	1.5
<b>56</b>	1	.8
<b>62</b>	1	.8
<b>Total</b>	126	96.9
<b>Missing System</b>	4	3.1
<b>Total</b>	130	100.00

A total of 121 respondents specified their ‘type of study’. 106 (81.5%) were Full-time, 5 (3.8%) were Part-time and 10 (7.7%) were not applicable. The results for type of study are provided in table 3. A total of 128 respondents specified their overall ‘academic performance’. 4 (3.1%) were below average, 40 (30.8%) were average, 61 (46.9%) were above average, 19 (14.6%) were very good and 4 (3.1%) were not applicable. The results for overall academic performance are provided in table 4.

Table 3: *Frequency and Percent for “Type of Study” of Respondent*

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<b>Full-time</b>	106	81.5
<b>Part-time</b>	5	3.8
<b>Not applicable to me</b>	10	7.7
<b>Total</b>	121	93.1
<b>Missing System</b>	9	6.9
<b>Total</b>	130	100.00

Table 4: *Frequency and Percent of overall “Academic Performance” of Respondent*

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<b>Below average</b>	4	3.1
<b>Average</b>	40	30.8
<b>Above average</b>	61	46.9
<b>Very good</b>	19	14.6
<b>Not applicable to me</b>	4	3.1
<b>Total</b>	128	98.5
<b>Missing System</b>	2	1.5
<b>Total</b>	130	100.00

***Problematic Internet Use (OCS), Life Satisfaction (SWLS), Loneliness (UCLA LS), Impulsiveness (BIS-11) and Personality Traits (EPQR-A: sub-scales – Extraversion, Neuroticism and Psychoticism)*** The following tables (5 – 15) outline the Means and

Standard Deviations for the variables used in the analysis and outline differences in scores between males and females.

Table 5 provides the descriptive statistics for the psychological measures including problematic internet use (measured by the OCS) with a total of 124 valid responses out of 130 (Mean = 116.69, SD = 32.09), Life Satisfaction with a total of 130 valid responses (Mean = 21.66, SD = 6.92), Loneliness with a total of 125 valid responses out of 130 (Mean = 24.72, SD = 14.53), Impulsiveness with a total of 121 valid responses out of 130 (Mean = 63.69, SD = 8.77), Extraversion with a total of 129 valid responses out of 130 (Mean = 3.48, SD = 2.06), Neuroticism with a total of 130 valid responses (Mean = 3.63, SD = 1.96), Psychoticism with a total of 130 responses (Mean = 2.08, SD = 1.26) and Lie Scale with a total of 128 valid responses out of 130 (Mean = 2.34, SD = 1.72).

Table 5: *Descriptive Statistics of Psychological Measures*

<b>Variable</b>	<b>Mean</b>	<b>Standard Deviation</b>
<b>Problematic Internet Use</b>	116.69	32.09
<b>Life Satisfaction</b>	21.66	6.92
<b>Loneliness</b>	24.72	14.53
<b>Impulsiveness</b>	63.69	8.77
<b>Extraversion</b>	3.48	2.06
<b>Neuroticism</b>	3.63	1.96
<b>Psychoticism</b>	2.08	1.26
<b>Lie Scale</b>	2.34	1.72

Table 6 shows the statistic, degree of freedom, and significant value of gender, age group, type of study, academic performance, problematic Internet use as a global measure through the OCS and the OCS subdimensions (social comfort, loneliness/depression,

diminished impulse control and distraction), life satisfaction, loneliness, impulsiveness and the EPQR-A subscales of extraversion, neuroticism, psychoticism and lie scale.

Table 6: *Shapiro-Wilk table of Normal Distribution*

<b>Variable</b>	<b>Statistic</b>	<b>df</b>	<b>Sig.</b>
<b>Gender</b>	.580	130	.000
<b>Age group</b>	.697	126	.000
<b>Type of study</b>	.387	121	.000
<b>Academic performance</b>	.870	128	.000
<b>Problematic Internet use</b>	.989	124	.445
<b>Social Comfort</b>	.963	126	.002
<b>Loneliness/Depression</b>	.985	129	.154
<b>Diminished Impulse Control</b>	.961	127	.001
<b>Distraction</b>	.977	128	.029
<b>Life Satisfaction</b>	.970	130	.006
<b>Loneliness</b>	.969	125	.005
<b>Impulsiveness</b>	.956	121	.001
<b>Extraversion</b>	.896	129	.000
<b>Neuroticism</b>	.901	130	.000
<b>Psychoticism</b>	.925	130	.000
<b>Lie Scale</b>	.927	128	.000

Note: significant at 0.5 level

df = degree of freedom

Table 7 shows the statistic, degree of freedom, and significant value of problematic Internet use as global measure through the OCS and the OCS subdimensions (social comfort, loneliness/depression, diminished impulse control and distraction), life satisfaction, loneliness, impulsiveness and the EPQR-A subscales of extraversion, neuroticism, psychoticism and lie scale while exploring differences in terms of gender.

Table 7: *Shapiro-Wilk table of Normal Distribution in terms of gender differences*

<b>Variable</b>	<b>Gender</b>	<b>Statistic</b>	<b>df</b>	<b>Sig.</b>
<b>Problematic Internet use</b>	Female	.985	86	.403
	Male	.940	38	.042
<b>Social Comfort</b>	Female	.968	87	.029
	Male	.935	39	.026
<b>Loneliness/Depression</b>	Female	.979	89	.156
	Male	.920	40	.008
<b>Diminished Impulse Control</b>	Female	.984	88	.358
	Male	.860	39	.000

<b>Distraction</b>	Female	.977	89	.110
	Male	.970	39	.381
<b>Satisfaction with Life</b>	Female	.970	90	.038
	Male	.968	40	.321
<b>Impulsiveness</b>	Female	.955	83	.005
	Male	.961	38	.210
<b>Loneliness</b>	Female	.965	86	.019
	Male	.960	39	.177
<b>Extraversion</b>	Female	.892	89	.000
	Male	.897	40	.002
<b>Neuroticism</b>	Female	.893	90	.000
	Male	.889	40	.001
<b>Psychoticism</b>	Female	.904	90	.000
	Male	.930	40	.016
<b>Lie Scale</b>	Female	.920	89	.000
	Male	.908	39	.004

Note: significant at 0.5 level

df = degree of freedom

*Problematic Internet use.* The OCS was used as a global measure of problematic Internet use. Table 8 highlights participant's scores on the OCS showing men having a lower mean regarding problematic Internet use (Mean = 112.58, SD = 35.80) than women (Mean = 118.51, SD = 30.35). The minimum problematic Internet use level for men was 57 and a lower level of 39 for women. The men's maximum level of 219 indicates higher levels of problematic Internet use compared to women's level of 187.

Table 8: *The Mean and Standard Deviation for Problematic Internet Use scores*

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Male total Problematic Internet use</b>	38	57	219	112.58	35.80
<b>Female total Problematic Internet use</b>	86	49	187	118.51	30.35

*Satisfaction with Life.* The scores for the Satisfaction With Life Scale shows that there is not a lot of difference in life satisfaction levels in both men (mean = 21.90, SD = 6.45) and women (Mean = 21.56, SD = 7.16). Results are shown in table 9.

Table 9: *The Mean and Standard Deviation for Satisfaction With Life scores*

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Male total Satisfaction with life</b>	40	5	34	21.90	6.45
<b>Female total Satisfaction with life</b>	90	5	35	21.56	7.16

*Impulsiveness.* Table 10 shows the impulsiveness scores for males and females. The scores indicate that males are higher in impulsiveness (Mean = 65.66, SD = 10.38) when compared to females (Mean = 62.78, SD = 7.83).

Table 10: *The Mean and Standard Deviation for Impulsiveness scores*

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Male total Impulsiveness</b>	38	43	91	65.66	10.38
<b>Female total Impulsiveness</b>	83	48	86	62.78	7.83

*Loneliness.* Table 11 highlights the scores for participants' experience of loneliness. Females are experiencing higher levels of loneliness (Mean = 25.52, SD = 15.03) in comparison to males (Mean = 22.95, SD = 13.35).

Table 11: *The Mean and Standard Deviation for Loneliness scores*

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Male total Loneliness</b>	39	0	59	22.95	13.35
<b>Female total Loneliness</b>	86	1	57	25.52	15.03

*Neuroticism (EPQR-A subscale).* Table 12 shows results for Neuroticism indicating slightly higher levels of neuroticism in females (Mean = 3.93, SD = 1.79) in comparison to males (Mean = 2.95, SD = 2.17).

Table 12: *The Mean and Standard Deviation for the EPQR-A subscale Neuroticism scores*

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Male total Neuroticism</b>	40	0	6	2.95	1.79
<b>Female total Neuroticism</b>	90	0	6	3.93	2.17

*Extraversion (EPQR-A subscale).* Table 13 highlights results for scores of Extraversion revealing that both male (Mean = 3.53, SD = 2.02) and female (Mean = 3.46, SD = 2.08) participants display similar levels.

Table 13: *The Mean and Standard Deviation for the EPQR-A subscale Extraversion scores*

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Male total Extraversion</b>	40	0	6	3.53	2.02
<b>Female total Extraversion</b>	89	0	6	3.46	2.08

*Psychoticism (EPQR-A subscale).* Psychoticism scores show that males (Mean = 2.43, SD = 1.39) have higher levels of Psychoticism than females (Mean = 1.92, SD = 1.18). Results are shown in table 14.

Table 14: *The Mean and Standard Deviations for the EPQR-A subscale Psychoticism scores*

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Male total Psychoticism</b>	40	0	5	2.43	1.39
<b>Female total Psychoticism</b>	90	0	5	1.92	1.18

*Lie Scale (EPQR-A subscale).* Table 15 shows results for the Lie Scale indicating male participants (Mean = 2.54, SD = 2.01) have higher Lie Scale levels when compared with female participants (Mean = 2.26, SD = 1.58).

Table 15: *The Mean and Standard Deviation for the EPQR-A subscale Lie Scale scores*

	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>
<b>Male total Lie Scale</b>	39	0	6	2.54	2.01
<b>Female total lie Scale</b>	89	0	5	2.26	1.58

## ***Inferential Statistics***

***Results of hypotheses.*** The inferential statistics outlined below indicate the results of the research hypotheses.

**Hypothesis 1** predicted that there will be a linear positive correlation between problematic Internet use and loneliness. A Pearson correlation coefficient found that there was a moderate positive significant correlation between problematic Internet use ( $M = 116.69$ ,  $SD = 32.09$ ) and Loneliness ( $M = 24.72$ ,  $SD = 14.53$ ) ( $r(119) = .442$ ,  $p < .001$ ) with moderately lower levels of problematic Internet use associated with moderately higher levels of loneliness as table 16 shows. Therefore the null hypotheses is rejected. This relationship can account for 19.54% of variation of scores.

Table 16: *Correlation table showing the relationship between problematic Internet use and Loneliness*

Variable	Problematic Internet use	Loneliness
<b>Problematic Internet use</b>	-	
<b>Loneliness</b>	.442	

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

**Hypothesis 2** predicted that there will be a linear positive correlation between problematic Internet use and neuroticism. A Pearson correlation coefficient found that there was a weak positive significant correlation between problematic Internet use ( $M = 116.69$ ,  $SD = 32.09$ ) and Neuroticism ( $M = 3.63$ ,  $SD = 1.97$ ) ( $r(124) = .255$ ,  $p = .004$ ) with slightly lower levels of problematic Internet use associated with slightly higher levels of Neuroticism as table 17 shows. Therefore the null hypothesis can be rejected. This relationship can account for 6.5% of variation of scores.

Table 17: *Correlation table showing the relationship between Problematic Internet Use and Neuroticism*

Variable	Problematic Internet Use	Neuroticism
<b>Problematic Internet Use</b>	-	
<b>Neuroticism</b>	.255**	

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

### ***Additional Analysis***

Due to the plethora of research on the phenomena of problematic Internet use and for the purposes of additional analysis, ancillary variables were incorporated into the regression model in order to elucidate any further relationship between the current research hypotheses and variables. Problematic Internet use in terms of gender differences was also assessed.

Multiple regression was used to test whether satisfaction with life, loneliness, impulsiveness, Neuroticism, Extraversion and Psychoticism were predictors of problematic Internet use with 113 viable responses (N = 113). Furthermore, multiple regression was used to determine which predictor variables make the strongest unique contribution to explaining the dependent variable problematic Internet use, when the variance explained by all other variables in the model is controlled for. Preliminary analyses were conducted to ensure that there was no violation of the assumptions of normality, linearity, singularity and multicollinearity. The following results were found: satisfaction with life (beta = .05, p = .645, 95% CI = -.681 - 1.094), impulsiveness (beta = .09, p = .332, 95% CI = -.333 - .976), loneliness (beta = .44, p < .001, 95% CI = .478 - 1.520), Neuroticism (beta = -.098, p = .363, 95% CI = -4.987 - 1.841), Extraversion (beta = -.134, p = .157, 95% CI = -4.885 - .799), Psychoticism (beta = -.216, p = .024, 95% CI = -9.683 - -.686) shown in table 18.

Table 18: *Correlation table of Problematic Internet Use, Satisfaction With Life, Impulsiveness, Loneliness, Neuroticism, Extraversion and Psychoticism*

<b>Variable</b>	<b>PIU</b>	<b>SWL</b>	<b>Impulsiveness</b>	<b>Loneliness</b>	<b>Neuroticism</b>	<b>Extraversion</b>	<b>Psychoticism</b>
<b>PIU</b>	1.000						
<b>SWL</b>	-.154	1.000					
<b>Impulsiveness</b>	.021	-.180	1.000				
<b>Loneliness</b>	.417	-.454	.124	1.000			
<b>Neuroticism</b>	.214	-.351	.097	.592	1.000		
<b>Extraversion</b>	-.276	.124	.182	-.334	-.285	1.000	
<b>Psychoticism</b>	-.201	.004	.395	-.008	-.102	.214	1.000

Note: significant at .05 level

PIU: Problematic Internet Use

SWL: Satisfaction With Life

- a. Dependent variable: Problematic Internet use
- b. Predictors: Satisfaction with life, Impulsiveness, Loneliness, Neuroticism, Extraversion, Psychoticism

Table 19 shows the correlations between the criterion variable problematic Internet use and predictor variables satisfaction with life, impulsiveness, loneliness, Neuroticism, Extraversion, Psychoticism. Multiple regression was used to test whether satisfaction with life, loneliness, impulsiveness, Neuroticism, Extraversion and Psychoticism were predictors of problematic Internet use. The results of the regression indicated that 6 predictors explained 19% of the variance ( $R^2 = .19$ ,  $F(6, 106) = 5.47$ ,  $p < .001$ ). This is significant and shows us that the explanatory variables are meaningful predictors of the criterion variable. It was found that two predictor variables were statistically significant. Loneliness makes the biggest contribution with a higher beta value and as a significant predictor of problematic Internet use ( $\beta = .44$ ,  $p < .001$ , 95% CI = .48 – 1.52). Psychoticism also significantly predicted problematic Internet use ( $\beta = -.22$ ,  $p = .024$ , 95% CI = -9.68 - -.69). The correlation coefficient results, R-square and estimated values are shown in table 19.

Table 19: *Multiple Regression Analysis of Problematic Internet Use, Satisfaction With Life, Impulsiveness, Loneliness, Neuroticism, Extraversion and Psychoticism*

Model	Unstandardised	Standard	Standardised	T	Sig.	Collinearity	
	Coefficients	Error	Coefficients			Tol	VIF
	B	SE	Beta	value			
<b>Constant</b>	90.265	24.758		3.646	.000		
<b>SWL</b>	.207	.448	.045	.462	.645	.767	1.305
<b>Impulsiveness</b>	.321	.330	.093	.974	.332	.781	1.280
<b>Loneliness</b>	.999	.263	.437	3.802	.000	.545	1.835
<b>Neuroticism</b>	-1.573	1.722	-.098	-.913	.363	.621	1.609
<b>Extraversion</b>	-2.043	1.433	-.134	-1.425	.157	.811	1.233
<b>Psychoticism</b>	-5.185	2.269	-.216		.024	.808	1.238
<b>Efficacy R<sup>2</sup></b>	.237						
<b>Adjusted R<sup>2</sup></b>	.193						

Note: significant at .05 level

SWL: Satisfaction With Life

Tol: Tolerance

VIF: Variance inflation factor

- a. Dependent variable: problematic Internet Use
- b. Predictors: Satisfaction with life, loneliness, impulsiveness, neuroticism, extraversion, psychoticism.

This study examines problematic Internet use in terms of gender variables while using the OCS as a global measure of problematic Internet use. An independent-samples t-test was conducted to compare the problematic Internet use scores for males and females. There was no significant difference in scores for males ( $M = 112.58$ ,  $SD = 35.80$ ) and females ( $M = 118.51$ ,  $SD = 30.35$ ); ( $t(124) = .95$ ,  $p = .35$  (two-tailed)). Mean scores for females were found to be slightly higher than males. The 95% confidence limits show that the population mean difference of the variables lies somewhere between -6.44 and 18.31. Zero is present within the magnitude of the differences in the means (mean difference = 5.93, 95% CI: -6.44 to 18.31) representing the null. Therefore if the null is present, there cannot be a significant result. The null cannot be rejected. Results are indicated in table 20.

Table 20: *An Independent Samples T-test table displaying the differences between Problematic Internet use and Gender*

<b>Variable</b>	<b>Groups</b>	<b>Mean</b>	<b>SD</b>	<b><i>t</i></b>	<b><i>df</i></b>	<b><i>p</i></b>
<b>Problematic use</b>	<b>Internet</b> Male	112.58	35.80	.95	124	.35
	Female	118.51	30.35			

$p > .05$

df = degree of freedom

## Discussion

Although there is much research regarding problematic Internet use, relatively little attention is given to the relationships between problematic Internet use and psychological variables. Thus, the aim of the present quantitative study was to investigate the relationship and gauge the impact between problematic Internet use, online cognitive behavioural aspects and factors of psychosocial well-being in terms of gender through correlational predictor variables such as life satisfaction, loneliness, and impulsiveness as well as personality traits (extraversion, neuroticism and psychoticism).

### *Findings in Terms of Previous Research*

**Overview of Present Research Findings.** Contrary to previous research findings, there was no distinctly significant difference in problematic Internet use for male and female participants ( $t(124) = .95, p = .35$ ) in the current study, possibly due to the gender imbalance which may have distorted results. However, variations in mean scores of females were slightly higher than males. There was a weak negative significant correlation between problematic Internet use and life satisfaction ( $r(124) = -.198, p = .027$ ) with slightly higher levels of problematic Internet use associated with lower levels of life satisfaction which supports assumptions of the current research. There was no significant association between problematic Internet use and impulsiveness ( $r(116) = .009, p = .927$ ) which is not consistent with the general research literature where studies have found that a correlation does exist (Reed et al., 2015). Correlation was used to explore the relationship among predictor variables and it was found that the variable loneliness is a meaningful predictor of problematic Internet use ( $r(119) = .442, p < .001$ ) therefore supporting the current study's hypothesis 1. It was also found that the personality traits neuroticism, extraversion and psychoticism were meaningful predictors of problematic Internet use. However, only neuroticism was positively correlated with problematic Internet use ( $r(124) = .255, p = .004$ ) which supports the current study's hypothesis 2 while extraversion and psychoticism were found to be negatively correlated with problematic Internet use. Results indicated that there was a moderate negative significant correlation between problematic Internet use and extraversion ( $r(124) = -.331, p < .001$ ) with higher levels of problematic Internet use associated with lower levels of extraversion. Results showed that there was a weak negative significant correlation between problematic Internet use and psychoticism ( $r(124) = -.204, p = .023$ ) with slightly higher levels of problematic Internet use associated with slightly lower levels of psychoticism. Unsurprisingly, significant levels of loneliness were positively

associated with problematic Internet use which supports previous research (Koç, 2011; Mark & Ganzach, 2014; Morahan-Martin and Schumacher, 2003; Pantic, 2014).

Loneliness was found to have a moderate positive significant correlation with problematic Internet use and made the biggest contribution as a significant predictor of problematic Internet use which is congruent with the relevant literature (Koç, 2011; Morahan-Martin and Schumacher, 2003; Pantic, 2014). Lonely individuals may be drawn online because of the increased potential for companionship as a way to modulate negative moods associated with loneliness. Anonymity and lack of face-to-face communication online may decrease self-consciousness and social anxiety which could facilitate pro-social behaviour and enhance online relationship formation resulting in reduced loneliness (Morahan-Martin & Schumacher, 2003; Rice & Markey, 2009). Conversely, the strong integration between social networking and the Internet represents a new communications based paradigm for net users and most of them choose to use social media platforms for regulating their personal and interpersonal relationships, communications and sociability with peers (Hawi, 2012, 2013; Kalkan; Celik & Odaci, 2013; Muscanell & Guadagno, 2012) which may contribute to the phenomenon of problematic Internet use (Fogel, & Nehmad, 2009; Shapira et al., 2003; Byun et al., 2009).

During regression analysis of the current study a linear relationship was observed between predictor variables and problematic Internet use, as well as normal distribution. Results of the regression indicated that satisfaction with life, loneliness, impulsiveness, neuroticism, extraversion and psychoticism explained 19% of the variance ( $R^2 = .19$ ,  $F(6,$

106) = 5.47,  $p < .001$ ). Loneliness made the biggest contribution as a significant predictor of problematic Internet use ( $\beta = .44$ ,  $p < .001$ , 95% CI = .48 – 1.52).

### ***Strengths and limitations of the Present Study***

This study was exploratory and followed a cross-section design and therefore shares the typical limitations of this kind of research. It was not possible to identify the stages of development of excessive or maladaptive problematic Internet use and Internet addiction based behaviour. To do so, one would have to conduct a longitudinal study and additional qualitative research. The study does not enable the identification of possible subtypes or additional mechanisms of development of excessive Internet use. Such information would of course be extremely valuable and would provide additional insight into the studied phenomenon. Methodologically, a significant limitation of the study is that it is descriptive and as such is not able to identify causal linkages among the factors it investigates. As the cross-sectional survey design is unable to verify causal relationships between the risk factors and problematic Internet use among the sample population the results should be interpreted carefully.

This study was conducted in a mixed population consisting of college students and the general public. Although a moderately heterogeneous population was sampled ( $N = 130$ ), a significant percentage of individuals were aged 18 (14.6%), 19 (24.6%), 20 (10%) and 21 (7.7%) which may not have been representative of the general population and a more diverse age group who use the Internet on a regular basis. It is unclear whether these results can be generalized in other cultures or to other populations. Cross-cultural studies are needed to

confirm these findings. Furthermore, missing data may indicate potential selection bias. Another limitation of the study is that no consideration of the socio-economic conditions of the participants was made. It would be appropriate to conduct quantitative and qualitative studies with a larger and more demographically diverse sample.

Another potential limitation of the current study was the use of self-report measures. Generally, participants want to respond in a way that makes them appear favourable and, in so doing, they tend to under report behaviours deemed inappropriate by observers or researchers and over report behaviours deemed appropriate (Donaldson & Grant-Vallone, 2002, p. 247). The self-report methodology necessitates additional caution in the evaluation of results. However, in favour of self-reports, it needs to be stated that their usage is very common in psychological research as it has a number of advantages over other methods, such as interviews (Frankfurt-Nachmias & Nachmias, 1996; Kuss et al., 2014). Surveys reduce interviewer bias, are anonymous, allow for considered answers rather than immediate responses, and are accessible to wider samples. Furthermore, they are more cost-effective as they do not require professional training for administration. The disadvantages include simple (and thereby possibly limited) questions, lack of probing, limited control, and a relatively low response rate (Frankfurt-Nachmias & Nachmias, 1996). This study contains an imbalance of gender (Male = 40; Female = 90) which may have distorted results.

The many different conceptualisations for what appears to be the same phenomenon have generated a lot of confusion and methodological difficulties that have somewhat hindered progress in the field of problematic Internet use (Pontes et al., 2015; Van Rooij & Prause, 2014). Most notably, such diversity with regard to defining the concept is perhaps

illustrated by the heterogeneity of the prevalence rates for problematic Internet use found worldwide (Pontes et al., 2015). Although the Internet addiction prevalence rates reported in nationally representative samples range from a minimum of 1% to a maximum of 18.7% (Lin, Ko, Chang, Liu, Wang, Lin et al., 2014; Rumpf et al., 2014), the disparity and discrepancy among rates are obvious, and therefore put into question the consistency of the assessment and theoretical framework of Internet addiction and problematic Internet use by researchers (Pontes et al., 2015).

Ultimately, in order to achieve a scientific consensus, researchers will have to adopt a standard definition of problematic Internet use and also put forth a solid theoretical framework that provides sufficient information on the conceptualisation and operationalisation of this phenomenon, both qualitatively and quantitatively (Weinstein, & Lejoyeux, 2010). Furthermore, a synthesis of the information regarding validity and usefulness of established scales is lacking and would help inform researchers and clinicians in their choice of measure when assessing for Internet addiction, potentially moving the field towards the adoption of well-established and validated tools (Byun et al., 2009; Laconi et al., 2014; Wartberg et al., 2013). Future research should focus on evaluating psychometric properties of existing scales in different cultural settings, age groups, and large samples while continuous efforts from researchers aimed at uncovering the concept's intricacies, aetiology and natural course will likely help overcome existing debates and controversies surrounding problematic Internet use.

### ***Implications and Future Research Directions***

It is clear from previous research that problematic Internet use is a topic of great interest to academics and the general population alike due to the ubiquitous availability and accessibility of the Internet on a myriad of platforms. Furthermore, problematic Internet use has been a topic of study for more than a decade (Guthrie & Gray, 1996; Straub & Nance, 1990; Young, & Nabuco de Abreu, 2010), and it is an emerging issue across several academic disciplines (Griffiths, 2010; Starcevic, 2010, 2013).

Nevertheless, future research may benefit from employing larger, more balanced and heterogeneous sample from a wider variety of demographic and sociocultural variables. Moreover, a more consensual definition of terms for problematic Internet use and what constitutes problematic Internet use behaviour would be beneficial, as well as the use of empirically tested and standardised psychometric measuring instruments. Additionally, self-report is a recognised limitation of the present study and, while correlational studies are reliant upon such measures, future research in the field may benefit from other types of analysis, such as experimental design.

Future research could focus on investigating particular behaviours and amount of time spent on the Internet by the individual. Internet use variables have been investigated with the most commonly identified link being between problematic Internet use and time spent online (Xu et al., 2012, 2014; Kheirkhah & Gouran, 2010; Lin et al., 2011; Stavropoulo, Alexandraki, & Motti-Stefanidi, 2013) and the use of specific online applications, notably gaming and social media (Xu et al., 2012; Carbonell et al., 2012; Kuss et al., 2013; Kuss et al., 2013; Morrison & Gore, 2010). According to Widyanto and Griffiths (2006), studies on problematic Internet use should focus on particular Internet activities carried out by individuals, because it is not the medium that influences the subject's behaviour but rather the behaviour that they engage in online in digital environments. Moreover, another important aspect concerns the intrinsic motivations that trigger subjects to establish a reliant connection to the Internet (Servidio, 2014). It appears that all these aspects may be predictive of problematic Internet use, yet few investigations have been conducted to analyse them in a

single model (Buchner et al., 2012). Given the rapid growth of the Internet and its applications, there is a need for new analyses that consider a multiplicity of factors, providing a holistic view of how several issues may lead individuals to develop maladaptive behaviours of Internet use (Iacovelli & Valenti, 2009).

Previous studies predicting Internet use have generally not used representative samples of the larger general population, relying on homogenous samples instead (Mark & Ganzach, 2014). This can skew the results and make it difficult to generalise to a broader population beyond the nature of the population from which the sample is drawn. With the exception of Correa, Hinsley and Gil de Zúñiga (2010) and Hills and Argyle (2003), most studies of psychosocial variables, personality and Internet use have relied on undergraduate university students as research subjects (Amiel & Sargent, 2004; Amichai-Hamburger & Ben-Artzi, 2000; Tuten & Bosnjak, 2001; Scealy, Phillips & Stevenson, 2002; Landers & Lounsbury, 2006; Wolfradt & Doll, 2001). Internet use can change with life experience therefore Internet prediction with a diverse and larger adult sample size would be of benefit to research.

Another reason for discrepant results in previous studies may be due to the time period in which the studies were done. While personality traits are invariant, the Internet landscape has changed dramatically over the time range that certain studies described here were conducted (Mark & Ganzach, 2014). To take an example, Landers and Lounsbury's study (first published online in 2004) is most comparable to research by Mark and Ganzach (2014) in terms of categories of Internet use. In 2006 there were 817 million global Internet users, which had doubled to 1.6 billion users in 2008, the time of collected data measures

(Internet World Stats & Population Statistics, 2013). Many new social media applications were launched since 2004 which have affected who uses the Internet. Facebook was launched in 2004, opened in 2006 to the public and in 2008 had over 100 million users (Zuckerberg, 2008). Though blogs have been around since 1998, they gained in popularity beginning around 2004, and in 2008, Technorati (Technorati.com) reported that 184 million people had started a blog and over 350 million people were reading blogs. Twitter was launched in 2006 and by 2008, 11.1% of adult Internet users were using Twitter (Twitter.com). Numerous other popular social media sites such as MySpace, Flickr, Windows Live Spaces, and Orkut (Comscore, 2013) were also highly active in 2008 (Mark & Ganzach, 2014). Thus, the rapid development of social media sites around 2004 may have also contributed to the conflicting results of studies done prior to, and since this time.

Having investigated and perused through the literature there appeared to be limited studies focusing specifically on the correlation between problematic Internet use and life satisfaction. Future research is needed in this area (Diener et al., 2003; Mark & Ganzach, 2014). Although the body of research on problematic Internet use will inevitably grow over the coming years, a challenge for the field is that technology evolves at such a pace that what might have been viewed as ‘maladaptive’ behaviour in relation to how the individual interacts with the Internet at a certain point in time, today may just be viewed as a fundamental part of everyday life. This is especially true with the advent and proliferation of smart phones, as people have potentially unlimited access to the Internet and are constantly online.

## ***Conclusion***

The findings of the current study make a useful contribution to the body of literature on problematic Internet use amongst a cohort of the general population. Of particular note was the significant correlational findings between loneliness, life satisfaction, personality traits and problematic Internet use. Thus far, two important points have emerged from the relevant literature and the current study. First, problematic Internet use is associated with broader psychosocial well-being (Morahan-Martin, 2007, 2008; Spada et al., 2008). Second, the cognitive and behavioural symptoms of problematic Internet use appear to be especially related to online social interaction (Caplan et al., 2009; Kimbrough, Guadagno, Muscanell, & Dill, 2013). Davis (2001) argues that problematic Internet use arises, to a large extent, from the unique social environment available online.

Overall the current study's findings reinforce the extant literature indicating that interpersonal uses of the Internet, personality dimensions and factors of psychosocial well-being meaningfully predict problematic Internet use. Additionally, research literature reveals a correlation between problematic Internet use and depression (Shapira et al., 2000), loneliness, a decrease in family communication and tension (Kraut et al., 1998; Kraut, 2002), intolerance and obstinacy (Yang, Choe, Baity, Lee, & Cho, 2005) and shyness (Lavin et al., 2004). However the field has some way to go in consolidating definitions of what problematic Internet use means and how it is measured so that future studies in this area could benefit from a more empirical means of testing. It is still a matter for debate whether excessive Internet use is an indication of existing psychological problems (Gönül, 2002). There is therefore a clear need for collaborative and consensual research into determining whether problematic Internet use is ultimately a cause or an effect (Odaci & Kalkan, 2010; Kalkan, 2012).

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## Appendices

### Appendix 1: Information Sheet

Dear Participant,

You are invited to participate in a research study that will form the basis for a Postgraduate Higher Diploma thesis. Please read the following information before deciding whether or not to participate.

This study will examine Online Cognition Internet use among participants in terms of gender, while also gauging the impact of psychological predictor variables for Online Cognition Internet use.

The current study aims to discover correlational relationships between these variables and extend this stream of research by exploring links between Online Cognition Internet use and variables of psychosocial well-being.

### Appendix 2: Participation Consent Form

'Examination of the relationship between predictor variables of Online Cognition Internet use and psycho-social well-being'

My name is Alan Shinkins and I am a final year postgraduate student conducting research in the Department of Psychology that explores an examination of predictor variables for Online Cognition Internet use. This research is being conducted as part of my studies and will be submitted for examination.

You are invited to take part in this study and participation involves completing an online anonymous survey. Data will be collected through an online psychometric paradigm. While the survey asks some questions that might cause some minor negative feelings, it has been used widely in research. If any of the questions do raise difficult feelings for you, contact information for support services are included on the final page.

This survey will take approximately 10 - 12 minutes to complete. There are no right or wrong answers but please if possible answer all questions with honesty. Answers will be kept anonymous.

Your answers will not be traced back to you, and you will not be asked to give your name or identification details. You have the right to withdraw at any stage during the completion of this survey

Participation is completely voluntary and so you are not obliged to take part.

Participation is anonymous and confidential. Thus responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from participation after the questionnaire has been collected.

The questionnaire will be securely stored and data from the questionnaire will be collected in electronic format and stored on a password protected computer.

It is important that you understand that by completing and submitting the questionnaire that you are consenting to participate in the study.

Should you require any further information about the research, please contact

Alan Shinkins,

My supervisor, Dr. Deirdre Walsh, can be contacted at [Deirdre.walsh@dbs.ie](mailto:Deirdre.walsh@dbs.ie).

Thank you for taking the time to complete this survey,

Alan.

### **Appendix 3: Demographic Questions**

1.	What is your Gender? 1. Male 2. Female
2.	What is your age?
3	(If student) Please select the type of study which applies to you: 1. Full-Time 2. Part-Time 3. Not Applicable to me
4.	How would you rate your overall academic performance? (please select appropriate option) 1. Very poor 2. Below average 3. Average 4. Above average 5. Very good 6. Not Applicable to me

#### **Appendix 4: Debrief form and Contact details of support services:**

If this online research questionnaire survey has raised any issues/feelings that you may want to discuss further you can contact:

- Addiction Counsellors of Ireland - Tel: (01) 7979187; Mail: [info@iaaac.net](mailto:info@iaaac.net); <http://www.addictioncounsellors.ie/>
- AWARE - Tel: 01 661 7211; Mail: [info@aware.ie](mailto:info@aware.ie); <http://www.aware.ie/helpline.htm>
- Samaritans - Tel: 1850 609 090 (ROI): 116 123; (<http://www.samaritans.org.uk/talk/branches/ireland.shtm>)
- Console - Tel: 1800 201 890; <http://console.ie/>
- National Counselling Service - HSE Dublin Mid-Leinster (West Dublin, West Wicklow & Kildare) Tel: 1800 234 112
- Headsup - Tel: 01 2057200 (switchboard) 01 2057326 direct line; Mail: [info@headsup.ie](mailto:info@headsup.ie); <http://www.headsup.ie/>

Useful websites:

[www.yourmentalhealth.ie](http://www.yourmentalhealth.ie)

[www.healthpromotion.ie](http://www.healthpromotion.ie)

[www.mentalhealthireland.ie](http://www.mentalhealthireland.ie)

[www.socialanxietyireland.com](http://www.socialanxietyireland.com)

[www.reachout.com](http://www.reachout.com)

[www.spunout.ie](http://www.spunout.ie)

If you have any questions or queries please do not hesitate to contact me at

### Appendix 5: Online Cognition Scale (Davis, Flett & Besser, 2002)

This questionnaire asks you about your thoughts related to the Internet. For each of the following questions, choose a number between "1" and "7" according to the scale shown below:

- 1 - Strongly Disagree**
- 2 - Disagree**
- 3 - Slightly Disagree**
- 4 - Neither Agree nor Disagree**
- 5 - Slightly Agree**
- 6 - Agree**
- 7 - Strongly Agree**

1. I am most comfortable online: 1 2 3 4 5 6 7
2. Few people love me other than those I know online: 1 2 3 4 5 6 7
3. I feel safest when I am on the Internet: 1 2 3 4 5 6 7
4. I often keep thinking about something I experienced online well after I have logged off: 1 2 3 4 5 6 7
5. When I am on the Internet, I often feel a kind of "rush" or emotional high: 1 2 3 4 5 6 7
6. You can get to know a person better on the Internet than in person: 1 2 3 4 5 6 7
7. I often find it peaceful to be online: 1 2 3 4 5 6 7
8. I can be myself online: 1 2 3 4 5 6 7
9. I get more respect online than 'in real life': 1 2 3 4 5 6 7
10. I use the Internet more than I ought to: 1 2 3 4 5 6 7
11. People complain that I use the Internet too much: 1 2 3 4 5 6 7
12. I never stay on longer than I had planned: 1 2 3 4 5 6 7
13. People accept me for who I am online: 1 2 3 4 5 6 7
14. Online relationships can be more fulfilling than offline ones: 1 2 3 4 5 6 7
15. When I am not online, I often think about the Internet: 1 2 3 4 5 6 7
16. I am at my best when I am online: 1 2 3 4 5 6 7
17. The offline world is less exciting than what you can do online: 1 2 3 4 5 6 7
18. I wish my friends and family knew how people regard me online: 1 2 3 4 5 6 7
19. The Internet is more 'real' than real life: 1 2 3 4 5 6 7
20. When I am online I don't think about my responsibilities: 1 2 3 4 5 6 7
21. I can't stop thinking about the Internet: 1 2 3 4 5 6 7
22. I am less lonely when I am online: 1 2 3 4 5 6 7
23. I cannot see myself ever without the Internet for too long: 1 2 3 4 5 6 7
24. The Internet is an important part of my life: 1 2 3 4 5 6 7
25. I feel helpless when I don't have access to the Internet: 1 2 3 4 5 6 7
26. I say or do things on the Internet that I could never do offline: 1 2 3 4 5 6 7
27. When I have nothing better to do, I go online: 1 2 3 4 5 6 7
28. I find that I go online more when I have something else I am supposed to do: 1 2 3 4 5 6 7
29. When I am online, I don't need to think about offline problems: 1 2 3 4 5 6 7
30. I sometimes use the Internet to procrastinate: 1 2 3 4 5 6 7
31. When I am online, I can be carefree: 1 2 3 4 5 6 7
32. I often use the Internet to avoid doing unpleasant things 1 2 3 4 5 6 7
33. Using the Internet is a way to forget about the things I must do but really don't want to

do 1 2 3 4 5 6 7
34. Even though there are times when I would like to, I can't cut down on my use of the Internet 1 2 3 4 5 6 7
35. I am bothered by my inability to stop using the Internet so much 1 2 3 4 5 6 7
36. My use of the Internet sometimes seems beyond my control. 1 2 3 4 5 6 7

### **Appendix 6: Satisfaction With Life Scale (Diener, Emmons, Larsen & Griffin, 1985).**

A 5-item scale designed to measure global cognitive judgments of one's life satisfaction (not a measure of either positive or negative affect). Participants indicate how much they agree or disagree with each of the 5 items using a 7-point scale that ranges from 7 strongly agree to 1 strongly disagree.

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- **7 - Strongly agree**
- **6 - Agree**
- **5 - Slightly agree**
- **4 - Neither agree nor disagree**
- **3 - Slightly disagree**
- **2 - Disagree**
- **1 - Strongly disagree**

1.	In most ways my life is close to my ideal.
2.	The conditions of my life are excellent.
3.	I am satisfied with my life.
4.	So far I have gotten the important things I want in life.
5.	If I could live my life over, I would change almost nothing.

**Appendix 7: UCLA Loneliness Scale – Version 3 (Russell, Peplau & Ferguson, 1978).**

A 20-item scale designed to measure one's subjective feelings of loneliness as well as feelings of social isolation. Participants rate each item as either O ("I often feel this way"), S ("I sometimes feel this way"), R ("I rarely feel this way"), N ("I never feel this way").

**INSTRUCTIONS:**

Indicate how often each of the statements below is descriptive of you.

**C indicates "I often feel this way"**

**S indicates "I sometimes feel this way"**

**R indicates "I rarely feel this way"**

**N indicates "I never feel this way"**

1.	I am unhappy doing so many things alone	O	S	R	N
2.	I have nobody to talk to	O	S	R	N
3.	I cannot tolerate being so alone	O	S	R	N
4.	I lack companionship	O	S	R	N
5.	I feel as if nobody really understands me	O	S	R	N
6.	I find myself waiting for people to call or write	O	S	R	N
7.	There is no one I can turn to	O	S	R	N
8.	I am no longer close to anyone	O	S	R	N
9.	My interests and ideas are not shared by those around me	O	S	R	N
10.	I feel left out	O	S	R	N
11.	I feel completely alone	O	S	R	N
12.	I feel completely alone	O	S	R	N
13.	My social relationships are superficial	O	S	R	N
14.	I feel starved for company	O	S	R	N
15.	No one really knows me well	O	S	R	N
16.	I feel isolated from others	O	S	R	N
17.	I am unhappy being so withdrawn	O	S	R	N

18.	It is difficult for me to make friends	O	S	R	N
19.	I feel shut out and excluded by others	O	S	R	N
20.	People are around me but not with me	O	S	R	N

**Appendix 8: Barrett Impulsiveness Scale - version 11 (Patton, Stanford & Barratt, 1995).**

DIRECTIONS: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and put an X on the appropriate circle on the right side of this page. Do not spend too much time on any statement. Answer quickly and honestly.

                                                                   
 Rarely/Never                      Occasionally                      Often                      Almost Always/Always

1	I plan tasks carefully.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	I do things without thinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	I make-up my mind quickly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	I am happy-go-lucky.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	I don't "pay attention."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	I have "racing" thoughts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	I plan trips well ahead of time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	I am self controlled.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	I concentrate easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	I save regularly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	I "squirm" at plays or lectures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	I am a careful thinker.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	I plan for job security.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	I say things without thinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	I like to think about complex problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16 I change jobs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17 I act "on impulse."	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18 I get easily bored when solving thought problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19 I act on the spur of the moment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20 I am a steady thinker.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21 I change residences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22 I buy things on impulse.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23 I can only think about one thing at a time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24 I change hobbies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25 I spend or charge more than I earn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26 I often have extraneous thoughts when thinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27 I am more interested in the present than the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28 I am restless at the theater or lectures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29 I like puzzles.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30 I am future oriented.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Appendix 9: Eysenck Personality Questionnaire Revised – Abbreviated (Francis, Brown, & Philipchalk, 1992).**

Directions:

Please answer each question by selecting either the 'Yes' or 'No' following the question. There are no right or wrong answers, and no trick questions. Work quickly and do not think long about the exact meaning of the questions.

1.	Does your mood often go up and down?	Yes	No
2.	Are you a talkative person?	Yes	No
3.	Would being in debt worry you?	Yes	No
4.	Are you rather lively?	Yes	No
5.	Were you ever greedy by helping yourself to more than your share of anything?	Yes	No
6.	Would you take drugs which may have strange or dangerous effects?	Yes	No
7.	Have you ever blamed someone for doing something you knew was really your fault?	Yes	No
8.	Do you prefer to go your own way rather than act by the rules?	Yes	No
9.	Do you often feel 'fed-up'?	Yes	No
10.	Have you ever taken anything (even a pin or button) that belonged to someone else?	Yes	No
11.	Would you call yourself a nervous person?	Yes	No
12.	Do you think marriage is old-fashioned and should be done away with?	Yes	No
13.	Can you easily get some life into a rather dull party?	Yes	No
14.	Are you a worrier?	Yes	No
15.	Do you tend to keep in the background on social occasions?	Yes	No
16.	Does it worry you if you know there are mistakes in your work?	Yes	No
17.	Have you ever cheated at a game?	Yes	No
18.	Do you suffer from 'nerves'?	Yes	No
19.	Have you ever taken advantage of someone?	Yes	No
20.	Are you mostly quiet when you are with other people?	Yes	No
21.	Do you often feel lonely?	Yes	No
22.	Is it better to follow society's rules than go your own way?	Yes	No
23.	Do other people think of you as being very lively?	Yes	No
24.	Do you always practice what you preach?	Yes	No

## Appendix 10: Battery of Questionnaires (Online Survey format)

### Questionnaire 1

Directions: This questionnaire asks you about your thoughts related to the internet. Respondents rate the agreeableness of each item on a 7-point Likert scale. For each of the following questions, choose a number between "1" and "7" according to the scale shown below:

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Slightly Disagree
- 4 - Neither Agree nor Disagree
- 5 - Slightly Agree
- 6 - Agree
- 7 - Strongly Agree

1. I am most comfortable online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

2. Few people love me other than those I know online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

3. I feel safest when I am on the Internet:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

4. I often keep thinking about something I experienced online well after I have logged off:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

5. When I am on the Internet, I often feel a kind of "rush" or emotional high:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

6. You can get to know a person better on the Internet than in person:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

7. I often find it peaceful to be online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

8. I can be myself online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

9. I get more respect online than 'in real life':

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

10. I use the Internet more than I ought to:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

11. People complain that I use the Internet too much:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

12. I never stay on longer than I had planned:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

13. People accept me for who I am online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

14. Online relationships can be more fulfilling than offline ones:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

15. When I am not online, I often think about the Internet:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

16. I am at my best when I am online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

17. The offline world is less exciting than what you can do online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

18. I wish my friends and family knew how people regard me online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

19. The Internet is more 'real' than real life:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

20. When I am online I don't think about my responsibilities:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

21. I can't stop thinking about the Internet:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

22. I am less lonely when I am online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

23. I cannot see myself ever without the Internet for too long:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

24. The Internet is an important part of my life:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

25. I feel helpless when I don't have access to the Internet:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

26. I say or do things on the Internet that I could never do offline:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

27. When I have nothing better to do, I go online:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

28. I find that I go online more when I have something else I am supposed to do:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

29. When I am online, I don't need to think about offline problems:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

30. I sometimes use the Internet to procrastinate:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

31. When I am online, I can be carefree:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

32. I often use the Internet to avoid doing unpleasant things:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

33. Using the Internet is a way to forget about the things I must do but really don't want to do:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

34. Even though there are times when I would like to, I can't cut down on my use of the Internet:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

35. I am bothered by my inability to stop using the Internet so much:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

36. My use of the Internet sometimes seems beyond my control:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

## Questionnaire 2

Directions: Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by choosing the appropriate number on the line preceding that item. Please be open and honest in your responding. 1 - Strongly Disagree 2 - Disagree 3 - Slightly Disagree 4 - Neither agree nor disagree 5 - Slightly Agree 6 - Agree 7 - Strongly Agree

1. In most ways my life is close to my ideal:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

2. The conditions of my life are excellent:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

3. I am satisfied with my life:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

4. So far I have gotten the important things I want in life:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

5. If I could live my life over, I would change almost nothing:

Mark only one oval.

1 2 3 4 5 6 7

Strongly Disagree

Strongly Agree

## Questionnaire 3

Directions: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and choose the appropriate option below. Do not spend too much time on any statement. Answer quickly and honestly. 1 - Rarely/Never 2 - Occasionally 3 - Often 4 - Almost Always/Always

1. I plan tasks carefully:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

2. I do things without thinking:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

3. I make-up my mind quickly:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

4. I am happy-go-lucky:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

5. I don't "pay attention":

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

6. I have "racing" thoughts:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

7. I plan trips well ahead of time:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

8. I am self-controlled:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

9. I concentrate easily:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

10. I save regularly:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

11. I "squirm" at plays or lectures:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

12. I am a careful thinker:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

13. I plan for job security:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

14. I say things without thinking:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

15. I like to think about complex problems:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

16. I change jobs:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

17. I act "on impulse":

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

18. I get easily bored when solving thought problems:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

19. I act on the spur of the moment:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

20. I am a steady thinker:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

21. I change residences:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

22. I buy things on impulse:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

23. I can only think about one thing at a time:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

24. I change hobbies:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

25. I spend or charge more than I earn:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

26. I often have extraneous thoughts when thinking:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

27. I am more interested in the present than the future:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

28. I am restless at the theatre or lectures:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

29. I like puzzles:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

30 . I am future oriented:

Mark only one oval.

- 1 - Rarely/Never
- 2 - Occasionally
- 3 - Often
- 4 - Almost Always/Always

## Questionnaire 4

Directions: Participants rate each item as either O ("I often feel this way"), S ("I sometimes feel this way"), R ("I rarely feel this way"), N ("I never feel this way"). Indicate how often each of the statements below is descriptive of you: O indicates "I often feel this way" S indicates "I sometimes feel this way" R indicates "I rarely feel this way" N indicates "I never feel this way"

1. I am unhappy doing so many things alone:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

2. I have nobody to talk to:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

3. I cannot tolerate being so alone:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

4. I lack companionship:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

5. I feel as if nobody really understands me:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

6. I find myself waiting for people to call or write:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

7. There is no one I can turn to:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

8. I am no longer close to anyone:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

9. My interests and ideas are not shared by those around me:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

10. I feel left out:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

11. I feel completely alone:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

12. I am unable to reach out and communicate with those around me:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

13. My social relationships are superficial:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

14. I feel starved for company:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

15. No one really knows me well:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

16. I feel isolated from others:

Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

17. I am unhappy being so withdrawn:  
Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

18. It is difficult for me to make friends:  
Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

19. I feel shut out and excluded by others:  
Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

20. People are around me but not with me:  
Mark only one oval.

- O - "I often feel this way"
- S - "I sometimes feel this way"
- R - "I rarely feel this way"
- N - "I never feel this way"

## Questionnaire 5

Directions: Please answer each question by selecting either the 'Yes' or 'No' following the question. there are no right or wrong answers, and no trick questions. Work quickly and do not think long about the exact meaning of the questions.

1. Does your mood often go up and down?  
Mark only one oval.

- Yes
- No

2. Are you a talkative person?  
Mark only one oval.

- Yes
- No

3. Would being in debt worry you?

Mark only one oval.

- Yes
- No

4. Are you rather lively?

Mark only one oval.

- Yes
- No

5. Were you ever greedy by helping yourself to more than your share of anything?

Mark only one oval.

- Yes
- No

6. Would you take drugs which may have strange or dangerous effects?

Mark only one oval.

- Yes
- No

7. Have you ever blamed someone for doing something you knew was really your fault?

Mark only one oval.

- Yes
- No

8. Do you prefer to go your own way rather than act by the rules?

Mark only one oval.

- Yes
- No

9. Do you often feel 'fed-up'?

Mark only one oval.

- Yes
- No

10. Have you ever taken anything (even a pin or button) that belonged to someone else?

Mark only one oval.

- Yes
- No

11. Would you call yourself a nervous person?

Mark only one oval.

- Yes
- No

12. Do you think marriage is old-fashioned and should be done away with?

Mark only one oval.

- Yes
- No

13. Can you easily get some life into a rather dull party?

Mark only one oval.

- Yes
- No

14. Are you a worrier?

Mark only one oval.

- Yes
- No

15. Do you tend to keep in the background on social occasions?

Mark only one oval.

- Yes
- No

16. Does it worry you if you know there are mistakes in your work?

Mark only one oval.

- Yes
- No

17. Have you ever cheated at a game?

Mark only one oval.

- Yes
- No

18. Do you suffer from 'nerves'?

Mark only one oval.

- Yes
- No

19. Have you ever taken advantage of someone?

Mark only one oval.

- Yes
- No

20. Are you mostly quiet when you are with other people?

Mark only one oval.

- Yes
- No

21. Do you often feel lonely?

Mark only one oval.

- Yes
- No

22. Is it better to follow society's rules than go your own way?

Mark only one oval.

- Yes
- No

23. Do other people think of you as being very lively?

Mark only one oval.

- Yes
- No

24. Do you always practice what you preach?

Mark only one oval.

- Yes
- No