UNIVERSIDADE DA BEIRA INTERIOR
Ciências Sociais e Humanas

Relationship between internet addiction and self-esteem: Cross-cultural study in Portugal and Brazil

Liliana Seabra

Dissertação para obtenção do Grau de Mestre em

Psicologia Clínica e da Saúde

(2º ciclo de estudos)

Orientador: Prof. Doutor Manuel Loureiro

Covilhã, Outubro de 2015

Dedicatória

«A diferença entre o "uso" e o "abuso" é precisamente essa: quando usas um prazer, enriqueces a tua vida, e não só o prazer em causa como a própria vida te agrada cada vez mais, sinal de que estás a abusar é quando notas que o prazer te vai empobrecendo a vida, sem que já nada nela te interesse exceto o seu gosto particular. Ou seja: o prazer deixa de ser um ingrediente aprazível da plenitude da vida, e torna-se um refúgio para onde foges da vida, onde te escondes dela (…) Não quero prazeres que me permitam fugir da vida, mas prazeres que ma tornem mais intensamente agradável.»

Fernado Savater in Ética para um Jovem (p. 99-100)

Dedico este estudo a todos os utilizadores da internet, portugueses e brasileiros que colaboraram na recolha de dados.

Agradecimentos

No fim desta etapa, gostaria de agradecer a todos os que me apoiaram e ajudaram a tornar este trabalho possível:

À equipa de investigação e comunidade universitária em geral, pela partilha de ideias, apoio, trabalho e pela oportunidade de crescermos juntos neste projeto.

Aos professores da equipa de investigação, especialmente ao Professor Manuel Loureiro, pela ajuda e apoio incondicional, pelo esforço por me receber, pelo esclarecimento de dúvidas, partilha e análise de ideias, o meu profundo agradecimento.

A todos os utilizadores da internet que divulgaram e colaboraram na recolha de dados, elementos cruciais para a concretização deste estudo.

Aos meus colegas de curso, especialmente à Sónia Alves, Inês Reis, Patrícia Pinho e Joana Taborda, pelo apoio e amizade ao longo de cinco anos de descobertas, brincadeiras e muito trabalho.

Aos meus amigos, especialmente Nádia Tomé, Marisa Fernandes e Elisabethe Gonçalves, pela ajuda preciosa e a quem recorri em todos os momentos que se revelaram especialmente difíceis.

À minha família, especialmente ao meu pai e minha mãe, pelo suporte a todos os níveis, pelo amor incondicional, pelo sempre carinho, pelo exemplo de humanidade e luta… por me tornarem na pessoa que hoje sou!

Ao Márcio Costa, pelo amor, carinho, compreensão, cumplicidade, apoio, ternura e paciência. Por ser o meu pilar e ponto de abrigo.

A todos aqueles que não estão descritos, mas que de uma forma ou outra participaram direta ou indiretamente, o meu agradecimento sincero!

Resumo

A internet é um fenómeno global com uma quantidade cada vez maior de utilizadores. Cada vez mais, as pessoas estão mais facilmente e de forma contínua ligadas à internet, devido ao uso de computadores portáteis, telemóveis com acesso à internet e tablets. No entanto, a internet tem desvantagens, geralmente relacionadas com o seu uso problemático, designado como adição à internet. As variáveis psicológicas que estão associados a essa adição ainda estão a ser investigadas. Deste modo, o objetivo desta dissertação é analisar a relação entre adição à internet e autoestima.

Esta dissertação é composta por três capítulos.

O primeiro capítulo inclui uma introdução ao trabalho elaborado e, contém os objetivos e âmbito da dissertação.

O segundo capítulo compreende o artigo "Relationship between internet addiction and self-esteem: Cross cultural study in Portugal and Brazil" (Relação entre adição à internet e autoestima: Estudo transcultural Portugal/Brasil), escrito em Inglês, para ser submetido à revista Computers in Human Behavior. O artigo está dividido em: introdução, fundamentação teórica e hipóteses, método, resultados, discussão e referências.

Sumarizando, a investigação contida no artigo, podemos referir que a amostra incluiu 1399 utilizadores da internet, portugueses e brasileiros, dos 14 aos 83 anos, que responderam ao Teste de Adição à Internet (IAT) (Young, 1998b) e à Escala de Autoestima de Rosenberg (RSES) (Rosenberg, 1989). A análise fatorial do IAT foi realizada, revelando três fatores: abstinência e encobrimento, consequências sociais e pessoais, e uso excessivo. Usando a correlação de Pearson, foi encontrada uma correlação negativa entre adição à internet e autoestima. A regressão linear indicou que a baixa autoestima explicava 11% da adição à internet, e os sentimentos negativos causados pela adição à internet (abstinência e encobrimento) explicavam 13% da autoestima. Na análise do IAT, descobrimos que os indivíduos com níveis mais altos de adição à internet foram: (a) homens; (b) brasileiros; e (c) jovens (14 a 25 anos).

A terceira parte inclui as considerações finais acerca, mais particularmente, do artigo e gerais da dissertação.

Foram também incluídos dois Anexos. O primeiro é uma contextualização teórica, mais ampla, acerca da adição à internet e autoestima. A segunda contém o pacote de informação para autores, da revista cientifica Computers in Human Behavior, no qual se basearam as normas usadas no artigo.

Palavras-chave

Adição à internet; autoestima; uso problemático da internet; internet.

Abstract

Internet is a global phenomenon with an ever increasing amount of users. More and more, people are easily and continuously online, due to the use of laptops, smartphones and tablets. Internet has its disadvantages, usually related to the problematic use of the internet, referred as internet addiction. The psychological variables that are associated with this addiction are still being investigated. Therefore we decided to study the relationship between internet addiction and self-esteem.

This dissertation is composed of three parts.

The first part is an introduction to the work elaborated, and contains the objectives and the context of the dissertation.

The second part includes the article "Relationship between internet addiction and self-esteem: Cross cultural study in Portugal and Brazil", written in English, to be submitted to the journal: Computers in Human Behavior. The article is divided in introduction, theoretical background and hypothesis, method, results, discussions and references.

To summarize the investigation contained in the article, we can say that the sample included 1399 Portuguese and Brazilian internet users, from 14 to 83 years old, who responded to the Internet Addiction Test (IAT) (Young, 1998b) and the Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1989). A factor analysis of the IAT was conducted, revealing three factors: withdrawal & concealment, social & personal consequences, and excessive use. Using Pearson correlation, we found a negative correlation among internet addiction and self-esteem. Linear regression indicated that low self-esteem explained 11% of internet addiction, and negative feelings caused by internet addiction (withdrawal & concealment) explained 13% of self-esteem. In the analysis of the IAT, we found that the individuals with higher levels of internet addiction were: (a) man; (b) Brazilian; and (c) young (14 to 25 years old).

The third part includes the final considerations about the article and the dissertation.

There are also two Appendixes. The first is a more extensive theoretical background about internet addiction and self-esteem. The second contains the author information pack, for the journal Computers in Human Behavior, in which the norms for the article were based.

Keywords

Internet addiction; self-esteem; problematic internet use; internet.

Índice

Lista de Figuras

Lista de Tabelas

Lista de Acrónimos

IAT	Internet Addiction Test
RSES	Rosenberg Self-Esteem Scale

Capítulo 1. Introdução

Este estudo enquadra-se num projeto de investigação do Departamento de Psicologia e Educação da Faculdade de Ciências Sociais e Humanas da Universidade da Beira Interior, designadamente do Curso de Psicologia, e envolveu uma Equipa de Investigação que procedeu à recolha de dados, através da internet, em Portugal e no Brasil. Esta investigação destinar-se-á ainda à obtenção do grau de mestre em Psicologia Clínica e da Saúde.

O objetivo principal desta investigação é investigar a relação entre adição à internet e autoestima. Os objetivos deste estudo compreendem ainda, investigar se há uma correlação negativa entre a adição à internet e a autoestima; perceber se a baixa autoestima constitui um fator preditor de adição à internet e vice-versa; apurar se entre as variáveis - idade, género e país - haverá eventuais diferenças relativamente à adição à internet.

Após uma análise preambular da literatura científica, no que concerne às ciências sociais e humanas, nomeadamente em Psicologia, acerca dos conceitos de autoestima e adição à internet, em particular, nas últimas décadas, constatamos que desde 1998 existem cada vez mais estudos na área da adição a internet. A adição à internet ainda não é reconhecida por nenhum sistema de classificação de perturbações, como por exemplo no DSM 5 (Manual de Diagnóstico e Estatística das Perturbações Mentais, Quinta Edição) (APA, 2014), por este motivo ainda existe muita controvérsia e contestação acerca do tema. Existem também investigações acerca da relação entre adição à internet e autoestima, no entanto a grande maioria destes dizem respeito à Ásia e América do Norte. Em Portugal e no Brasil não há estudos conhecidos acerca deste assunto, e assim este estudo pretende contribuir não só, com a validação dos resultados apresentados pelas restantes investigações referidas, mas também com o estudo da adição à internet como preditora da autoestima.

Pretendemos assim contribuir, perante a comunidade científica e comunidade em geral, para o fornecimento de dados e informações científicas que empiricamente colaborem para o aprofundamento da análise de uma hipotética relação entre a autoestima e a adição à internet em Portugal e no Brasil, a relação entre ambas as variáveis, que se afigura como uma ligação relevante entre variáveis da esfera da vida pessoal, social e da esfera cibernética.

Esta dissertação encontrar-se-á dividida em três capítulos:

No segundo capítulo poderemos encontrar o artigo a enviar à revista selecionada. Primeiramente, irá proceder-se a uma fundamentação teórica na qual se inserem o tema da adição à internet e autoestima, seguido da relação entre as duas, depois, serão avaliadas as restantes variáveis (género, idade e país) onde, através dos estudos anteriores, se predirá quais os grupos de risco de adição à internet e, por fim, serão formuladas as hipóteses. Seguidamente, explicar-se-á o método utilizado, onde serão descritos os participantes, os instrumentos utilizados, os procedimentos e a análise de dados. Far-se-á também, uma ilustração dos resultados: a análise fatorial, análise da correlação, a análise da regressão linear, análise do T-teste e ANOVA. Por fim, será apresentada a

discussão dos resultados, onde será abordada a análise dos mesmos, a contribuição do estudo, as limitações encontradas e sugestões para as próximas investigações.

No Capítulo 3 poderemos consultar as considerações finais relevantes nesta investigação.

Em anexo apresentaremos primeiramente uma revisão teórica mais extensa acerca da adição à internet e autoestima, no anexo 2 encontrar-se-ão os requisitos de submissão para a revista para a qual o artigo será submetido.

Considerando que este trabalho foi ainda desenvolvido com o propósito da elaboração de um artigo para ser submetido e publicado numa publicação periódica internacional específica, relacionada com as temáticas centrais sob investigação – *Computers in Human Behavior* – a estrutura central do trabalho apresenta-se adaptada ao formato de artigo científico, de acordo com as diretrizes para a proposta de submissão (cf. Anexo 2). O referido artigo, componente deste trabalho, encontrar-se-á redigido e apresentado em língua inglesa, por ser um requisito da referida revista. A escolha desta revista deve-se ao facto de se verificar que a mesma se dedica a examinar os efeitos do uso de computadores através de uma perspetiva psicológica.

Capítulo 2. Artigo "Relationship between internet addiction and self-esteem: Cross-cultural study in Portugal and Brazil"

Abstract:

Internet addiction or problematic internet use has long been a matter of public concern. The aim of this study is to examine the relationship of internet addiction and self-esteem. The sample included 1399 Portuguese and Brazilian internet users, from 14 to 83 years old, who responded to the Internet Addiction Test (IAT) (Young, 1998b) and the Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1989). A factor analysis of the IAT was conducted, revealing three factors: withdrawal & concealment, social & personal consequences, and excessive use. Using Pearson correlation, we found a negative correlation among internet addiction and self-esteem. Linear regression indicated that low self-esteem explained 11% of internet addiction, and negative feelings caused by internet addiction (withdrawal & concealment) explained 13% of self-esteem. In the analysis of the IAT, we found that the individuals with higher levels of internet addiction were: (a) man; (b) Brazilian; and (c) young (14 to 25 years old).

Key Words: internet addiction; self-esteem; problematic internet use; internet.

1. Introduction

Internet is global phenomenon with an ever increasing amount of users, every day. This users can be any age, from any country, because internet offers different benefits, enjoyed by different people.

More and more, people are easily and continuously online, due to the use of laptops, smartphones and tablets. The access can be done everywhere and anywhere, and the use is infinite. It can provide new possibilities to retrieve and exchange information, connect us with others, and entertain us.

Internet has its disadvantages, usually related to the excessive or problematic use of the internet, which jeopardizes some part of the user's life (e.g. social, occupational or physical). The excessive or problematic use is commonly referred as Internet addiction (Young, 1998a, 2009).

Research on this topic and the variables related to it, has been actively carried out in highly wired nations such as South Korea, China, United States of America and some countries in Europe. However, in Portugal and Brazil, the number of studies is still very low. Therefore, the main goal of this study is to analyze the relationship between internet addiction and self-esteem, and also to understand which variable explains the other, and analyze the variables gender, age and country, in internet addiction.

This study is cross-cultural, with a sample from Brazil and Portugal.

2. Theoretical Background and Hypothesis

2.1. Internet Addiction

Internet addiction is characterized by uncontrollable and damaging use of the internet, involving excessive preoccupations regarding internet, unpleasant feelings when offline, an increase tolerance to the effects of being offline and denial of the problematic behavior, that leads to impairment or distress in interpersonal relationships, school and/or employment, and health (Czincz & Hechanova, 2009; Weinstein & Lejoyeux, 2010; Young, 1998a, 2009).

Until now, neither a universal definition nor standardized diagnostic criteria of internet addiction exists. The terminology used to depict internet excessive use includes: internet addiction, problematic internet use, internet dependency, unregulated internet usage, etc. (Chang & Law, 2008; Czincz & Hechanova, 2009; LaRose, Lin & Easton, 2003; Sinkkonen, Puhakka & Meriläinen, 2013). The most frequently used term in the literature is internet addiction (Carbonell, Guardiola, Beranuy & Bellés, 2009; Laconi, Rodgers & Chabrol, 2014).

This controversy appears to be related to the fact that internet addiction, hasn't been integrated in any diagnostic system (American Psychiatric Association, 2014; Czincz & Hechanova, 2009; Weinstein & Lejoyeux, 2010). Internet addiction has been compared to pathological gambling (Young, 1998a), however, it is possible that further studies in the area considered internet addiction as an addiction disorders, since the American Psychiatric Association (2014) recognized the existence of behavior addictions or non-substance related disorders (e.g. pathological gambling). Furthermore, neuroimaging studies examining findings on PET and EEG exams stated that internet addiction shared similar neurobiological mechanisms of substance addiction and behavior addiction (Yuan, Qin, Liu & Tian, 2011).

In general, researchers agree that internet addiction can be diagnose if the user presents: (a) excessive internet use (failure to control the amount of time spent online); (b) withdrawal symptoms (negative emotions when restricted from internet); (c) tolerance (increase of hours of internet use and need for better computer/technology equipment or software); (d) concealment (attempts to hide the extent of the involvement); and (e) adverse consequences (negative outcomes such as social, financial physical, academic, or work-related problems resulting from the internet) (Griffiths, 2000; Weinstein & Lejoyeux, 2010; Widyanto & McMurran, 2004; Young, 1998a).

Young (2009) proposed three subtypes of internet addicts based on type of internet activity: excessive gaming (i.e. all types of online activities in any kind of device in which subjects can play a game or gamble), online sexual preoccupations (i.e. viewing, downloading and trading online pornography or are involved in adult fantasy role-play rooms), and emailing/texting (i.e. chatting online). Subjects addicted to the internet enjoy primarily aspects of the internet which allowed them to socialize and exchange ideas with other people. That social aspect makes internet more addictive.

However, the addictive behavior, can also be related to temporarily run away from life's problems. Moreover, anonymity, accessibility and affordability are three factors associated with compulsive online use, especially in online sexual preoccupations (Czincz & Hechanova, 2009; Pontes & Patrão, 2014; Young, 1998a).

Subjects addicted to the internet report that their maladaptive use resulted in occupational/ academic (e.g. ignoring work), social (spending less time with family/friends), financial (increasingly expenses with new hardware or software) and physical problems (sleep deprivation, excessive fatigue, sedentary lifestyle, back strain, eyestrain) (Chang & Law, 2008; Sinkkonen et al., 2013; Weinstein & Lejoyeux, 2010; Young, 1998a).

2.2. Self-Esteem

Self-esteem is a person's overall self-evaluation or sense of self-worth, used to appraise traits and abilities. This evaluation, based on our thoughts, also contains social judgments that are internalized (Myers, 2010; Neto, 1998; Rosenberg, 1989).

Self-esteem can be positive or negative. People with low self-esteem often have problems in life. They usually take a negative view on life, feeling more unhappy, depressed, unfriendly, aggressive or fearful towards others, secluded, and afraid of being punished (Chabot, 2000; Myers, 2010; Neto, 1998; Reeve, 2010). Furthermore, they are more vulnerable too assorted clinical problems, including addictions (Greenberg, Lewis & Dodd, 1999; Parrott, Morinan, Moss & Scholey, 2004). In contrast, people with high self-esteem typically have a positive attitude toward themselves and others, and are usually more happy, active, expressive, sociable, popular, assertive in their relationships, more confident and optimist in their opinions and judgments, more healthy, well adapted in society, and with a higher quality of life (Myers, 2010; Neto, 1998; Reeve, 2010).

A person view of the self (i.e. a person's essential being), can interfere with their self-esteem. Often times, people idealize their self, creating an idea of a better identity that they want to become. When the ideal self is close to its real self, the person feels proud of himself, and probably will have a high self-esteem. If his real self is far from the ideal, he feels guilty and responsible, and it can affect negatively his self-esteem (Chabot, 2000).

Culture is also an important variable to the development of self-esteem. Depending if a person is from an individualistic culture or a collectivistic culture, so his self-concept and self-esteem diverges. Self-esteem in collectivist cultures correlates closely with "what others think of me and my group". For those in individualistic cultures, self-esteem is more personal and less relational. When their personal identity is threatened, they feel angrier and gloomier than when someone threatens their collective identity (Myers, 2010).

2.3. Relationship between Internet Addiction and Self-esteem

In the investigations concerning internet addiction, researchers have been trying to understand what kind of psychological features people have when they are overly involved in the use

of the internet. To this date, some psychological variables have been studied and reported as variables correlated with internet addiction, such as: self-esteem, self-control, anxiety, loneliness, life satisfaction, extraversion, neuroticism, impulsivity, etc. (Bianchi & Phillips, 2005; Bozoglan, Demirer & Sahin, 2013; Leung, 2008; Park, Kang & Kim, 2014; Zhang et al., 2015).

Based on the findings on substance addiction, that low self-esteem is a predictor of excessive substances consume (Parrott et al., 2004), researchers foresee that the connection between internet addiction and self-esteem, follow the same path. In fact, various studies have encounter, not only a correlation between the two variables, but also that self-esteem is a predictor of internet addiction (Aydin & Sari, 2011; Bozoglan et al., 2013; Kim & Davis, 2008; Leung, 2008; Sariyska et al., 2014; Stieger & Burger, 2010; Yen, Chou, Liu, Yang & Hu, 2014).

Several researchers have suggest some reasons behind this phenomenon. Greenberg et al. (1999) proposed that low self-esteem might lead some individuals to seek temporary relief from life's problems, through activities that enable individuals to escape reality. Griffith (2000) agreed with those ideas, adding that the excessive use of the internet can be a coping style and a way of compensating some deficiencies, such as low self-esteem. Young (2009) also suggested that that individual who suffer from low self-esteem can use internet to feel better about themselves and their circumstances. Bianchi and Phillips (2005) suggested that people with low self-esteem have a greater tendency to seek reinsurance online, and there are more likely to use internet or phones inappropriately. Yen et al. (2014) stated that the internet provides subjects with activities in which they can feel confident and better about themselves, making it appear that they have a higher self-esteem in the virtual world. Park et al. (2014) referred that when real-life problems relationships are difficult, subjects with low self-esteem, are more likely to form virtual relationships on the internet, in order to recover their damaged self-esteem in real-life relationships.

However, it is still unclear if there can be a similar, but opposite association, more specifically, if high levels of internet addiction can predict low self-esteem. This issue is still unclear because there hasn't been studies that have successfully verified this prediction pathway. The idea which this prediction is based, is that individuals with internet addiction suffer adverse consequences, such as a feelings of loss of control, failure and loneliness, that lower self-esteem (Bianchi & Phillips, 2005; Greenberg et al., 1999).

Therefore, this study will be testing if: (a) there is a negative correlation between internet addiction and self-esteem (H_1); (b) low self-esteem leads to higher levels of internet addiction (H_2); and (c) higher levels of internet addiction leads to low self-esteem (H_3).

2.4. Other Variables

Since not a large number of studies have been conducted in Portugal and Brazil, it is also important to analyze some variables that might be related to internet addiction. The variables in study are gender (H_4), age (H_5) and country (H_6).

Previous studies have evaluated which group, man or women, is at most risk to developed internet addiction, nevertheless, conclusive findings are still lacking. Some studies report man as the

highest risk group (Greenberg et al, 1999; Pontes & Patrão, 2014; Sinkkonen et al., 2013), other studies have found that women have more internet addiction (Leung, 2008; Young, 1998), while others have not found a significant result (Bianchi & Phillips, 2005; Chang & Law, 2008; Sariyska et al., 2014). A hypotheses for this discrepancy, is that progressively more man and women worldwide are gaining access to the internet.

Adolescents have been depicted as the age group at higher risk for the development of internet addiction (Pontes & Patrão, 2014). The reasons for this fact are numerous. First, younger people experience more problems in the use of internet, because they are more inclined than older people to embrace new technologies (Bianchi & Phillips, 2005; Conti et al., 2012). Second, adolescents and young adults are in higher risk to develop addictions, because they make a less conscience consume/use, usually searching to get a higher excitement (Greenberg et al, 1999; Parrott et al., 2004). Third, since adolescents are in the process of developing their sense of identity, they find internet a safe space to experiment with their possible selves and establish social relationships, often behaving differently than in real life. The identity presented by adolescents online, can have a bigger acceptance by their peers, which can, thereby, make adolescents get, more and more, caught in the internet (Aydin & Sari, 2011; Barker, 2009; Park et al., 2014; Valkenburg, Peter & Schouten, 2006). Additionally, adolescents can develop a behavior called "faking" (i.e. lie or hide about personal characteristics, such as age, weight or appearance), which has been found to be strongly related to internet addiction (Harman, Hansen, Cochran & Lindsey, 2005; Gil-Or, Levi-Belz & Turel, 2015).

The variable "Country" is the hardest to predict. Until 2005, there have been no studies conducted in Portugal and Brazil (Carbonell et al., 2009). After that date, the number of studies in these countries is still extremely low. In the course of this investigation, only two were found. However, it is possible that the Portuguese population will have a greater risk to develop internet addiction, since there is a higher number of internet users in Portugal (64 600 internet users), then in Brazil (57 600 internet users) (The World Bank, 2015), and also a higher proportion of internet users per population, since Portugal has a lower number of citizens.

2.5. Hypotheses

The following hypotheses were defined:

H_1: Internet Addiction and Self-Esteem are significantly and negatively correlated.

H_2: Self-esteem predicts Internet Addiction.

H_3: Internet Addiction predicts Self-esteem.

H_4: A significant difference exists in Internet Addiction between men and women.

H_5: A significant difference exists in Internet Addiction between young, young adults, adults, mature adults and seniors.

H_6: A significant difference exists in Internet Addiction between Portuguese and Brazilian.

3. Method

3.1. Participants

A total of N = 1623 participants participated in the current study. Evaluation of the original data, uncovered 224 unusable surveys of participants that did not respond to more than 10% of the questionnaires. These participants were eliminated. As a result, the total of participants were N = 1399. Mean age was 38.68 years, ranging from 14 to 83 years old. 57.3 % of the sample were women and 42.40 % were men. 613 (43.80%) of the participants were Portuguese, 746 (53.3 %) were Brazilian, 10 (.7 %) were both Portuguese and Brazilian and eight (.6 %) were from a different country. 43.5 % lived in Portugal, 53 % lived in Brazil and 1.9 % lived in another country.

3.2. Instruments

3.2.1. Internet Addiction Test (IAT)

The IAT (Young, 1998b) is a measure of generalized internet addiction, and it is the most widely used instrument in internet addiction research (Laconi et al., 2014). The IAT is composed of 20 items scored on a five-point Likert scale, ranging from "rarely" to "always". The sum score of items (from 20 to 100) reflect how addicted the respondent is: average internet user (20 - 39), mildly addicted to the internet (40 - 69), and serious addictive user (70 - 100). The test was validated by Widyanto & McMurran (2014), who proposed a six-factor structure for IAT: salience, excessive use, neglect work, anticipation, lack of control, neglect social life. Chang & Law (2008) identified three factors: withdraw and social problems, time management and performance, and reality substitute. A Portuguese version of IAT (Conti et al., 2012) also demonstrate a satisfactory internal consistency. Analysis of the reliability of the IAT, for this study, revealed an alpha coefficient of .92. Factor analyses revealed three factors, which we entitle: withdrawal and concealment (α = .85); social and personal consequences (α = .85); and excessive use (α = .77).

3.2.2. Rosenberg Self-Esteem Scale (RSES)

The Rosenberg Self-Esteem Scale (Rosenberg, 1989) is a brief measure of ten items that was constructed to measure respondent's attitudes and beliefs about self-esteem (e.g.: "I feel I'm a person of worth"). The Portuguese version of RSES (Pechorro, Marôco, Poiares & Vieira, 2011) also includes 10 items on a four-point Likert-scale, ranging from "strongly disagree" to "strongly agree". The total score of the items indicates the level of self-esteem, however, five of the items are scored inversely. The Cronbach's α from the current sample was .86.

3.3. Procedures

The study was conducted online to ensure that the participants were internet users. Participants were recruited via email or social network sites, like Facebook. The data has collected in a four month period, from October 2014 and February 2015. The questionnaires were administrated

in the official language of the countries (i.e. Portuguese). All the participants voluntarily took part in this investigation.

3.4. Data Analysis

The data were analyzed with SPSS 22 (Statistical Package for the Social Studies) software. The chosen level of significance was an alpha level ≤ 0.05. Normality was assumed, based on the Central Limit Theorem for large samples. The total score for the IAT and RSES were calculated by summing the scores of each item per participant. Factor analyses of the IAT was made, using Eigenvalues and Scree plots to determine the number of factor to be extracted, resulting in three significant factors. Descriptive statistics for age, sex, country, the total score of the instruments IAT and RSES, and the three factors of IAT, were calculated. The hypotheses were tested using inferential statistics. First, a Pearson correlation was applied to analyze if a correlation exists between self-esteem, internet addiction and the three factors extracted by factor analyses of the IAT. Then, to understand in which way the influence between these variables was established, a linear regression was established, using the enter method for H_2, and the stepwise method for H_3. Initially, self-esteem was considered the independent variable, then, the independent variable was internet addiction and its three factors. T-test were made to find if differences exist in internet addiction between Portuguese and Brazilian and men and women. Individuals were distributed in to five age groups, each one with 20 % of participants. To test the differences between ages, a one-way ANOVA was completed.

4. Results

4.1. Factor Analysis of IAT

From the factor analysis of the IAT, 19 items were extracted to three different factors (Figure 1). Only 19 items were extracted, since one (item 4) was not significant for any of the three factors. The factors were assigned labels that resumed the content of the items: Withdrawal and Concealment, Social and Personal Consequences and Excessive Use.

Factor 1 (α = .84), Withdrawal and Concealment, captures individual's degree of moodiness or difficulties when constrained to be away from the internet (e.g. "how often do you feel depressed, moody or nervous when you are offline, which goes away once you are back online?"), desire to be online again (e.g. "how often do you fell preoccupied with the internet when offline, or fantasize about being online?"), and concealment of the problem (e.g. "how often do you become defensive or secretive when anyone asks you what you do online?").

Factor 2 (α = .84), Social and Personal Consequences, includes adverse consequences for the subject (e.g. "how often do you lose sleep due to late-night logins?") and for others (e.g. "how often do others in your life complain to you about the amount of time you spend online?").

Factor 3 (α = .77), Excessive use, describes problems involving excessive use (e.g. “how often do you find that you stay online longer than you intended?).

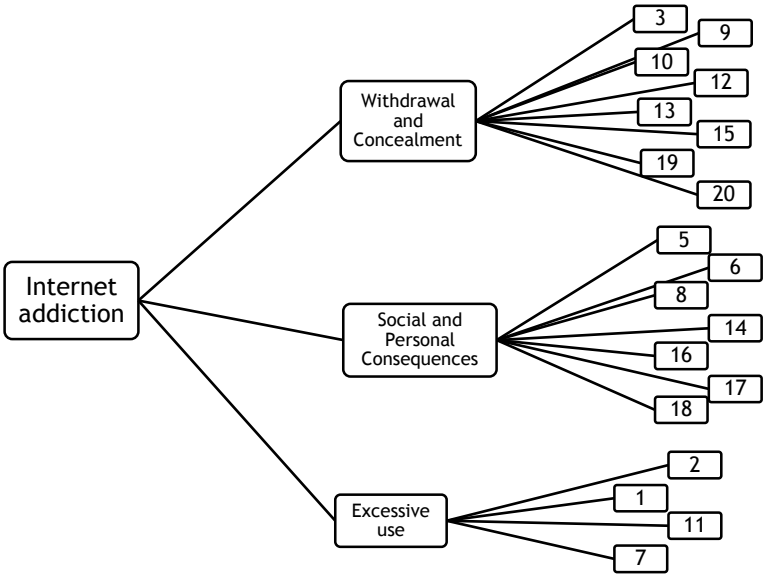

Figure 1. Factors and Items for the IAT instrument

4.2. Descriptive Findings

Evaluation of the data determined that among the 1399 subjects, most subjects (60.4 %) were average internet users, scoring lower than 39 on IAT ($\overline{X}$ = 36.25, SD = 12.66). In ascending order, subjects scored higher in the Excessive Use (Factor 3) ($\overline{X}$ = 10.75, SD = 3.88), followed by Social and Personal Consequences (Factor 2) ($\overline{X}$ = 11.53, SD = 4.90), and finally Withdrawal and Concealment (Factor 1) ($\overline{X}$ = 12.22, SD = 5.04).

The majority of the subjects (91.8 %) had an average or high self-esteem, scoring higher than 25 points on RSES ($\overline{X}$ = 32.98, SD = 5.01).

4.3. Correlation Analysis of Internet Addiction and Self-Esteem

Correlations between the tree IAT factors, total IAT score and total RSES scored were computed to test H_1, using Pearson Correlation. As shown in Table 1, all correlations were significant to an alpha level ≤ 0.01, for all the subjects in the sample (N = 1399). Cohen (1988) determined that correlations in social sciences can be: weak if r = .1 - .23; moderate if r = .24 - 0.36, and strong, if r ≥ .37 (strong). Considering Cohen’s (1988) intervals to interpret the strength of the correlation in social sciences, all the correlations were moderate. The correlations between total score of self-esteem and total internet addiction (r = - .33), withdrawal and concealment (r = - .36), social and personal consequences (r = - .30) and excessive use (r = - .22) were negative, which is indicative that the higher one variable is, the lower the other is, and vice versa.

Table 1

Correlations among self-esteem, internet addiction, withdrawal and concealment, social and personal consequences and excessive use

		Total Self-Esteem
Total Internet Addiction	Pearson Correlation	-,332**
	Sig.	,000
	N	1399
Withdrawal & Concealment	Pearson Correlation	-,361**
	Sig.	,000
	N	1399
Social & Personal Consequences	Pearson Correlation	-,297**
	Sig.	,000
	N	1399
Excessive Use	Pearson Correlation	-,219**
	Sig.	,000
	N	1399

**p <.01

4.4. Linear Regression Analysis of Internet Addiction and Self-Esteem

Since correlation between self-esteem and internet addiction was found to be significant and in order to understand in which direction this relationship operates, a linear regression was made to test H_2 and H_3.

To test H_2, a simple linear regression was performed, using the enter method. Self-esteem was considered the independent variable, and internet addiction the dependent variable. As shown in Table 2, 11% (adjusted $r^2 = .11$, $p \geq .001$) of the score of internet addiction was explained by self-esteem. With an increase of one score unit of self-esteem, a reduction of .84 of the score of internet addiction, takes place. The results indicated that people with low self-esteem have higher levels of internet addiction.

Table 2

Summary of Simple Linear Regression results (with enter method) for self-esteem and internet addiction

Predictor	r^2	Ajusted r^2	B	Beta
Self-esteem	.11***	.11***	-.838***	-.332

***p <.001

To test H_3, a multiple liner regression was completed. Considering that four independent variables were used to test H_3 and to better calculate which variable better predicted the dependent variable, and also the sequence in which the regression was occurring, the stepwise method was used (Abbad & Torres, 2002). Table 3, demonstrates the results of the regression analysis. Step by step,

the independent variables (Excessive Use, Social & Personal Consequences, total internet addiction, and Withdrawal & Concealment) were added to the regression, in ascending order of correlation with the dependent variable (self-esteem). At the end of the analysis, all independent variables, except Withdrawal & Concealment, were excluded. This indicates that the factor Withdrawal & Concealment is the best predictor, predicting 13% (adjusted $r^2 = .13$, $p \geq .001$) of total self-esteem score. A reduction of .36, happens on the score of self-esteem, when one score point of Withdrawal & Concealment occurs. Therefore, the results revealed that people with high levels of Withdrawal & Concealment have lower levels of self-esteem.

Table 3

Summary of Multiple Linear Regression results (with stepwise method) for internet addiction and self-esteem

	Predictor	r^2	Ajusted r^2	B	Beta
Step 1					
	Excessive Use	.05	.05***	-.23***	-.22
Step 2					
	Social & Personal Consequences	.09	.09***	-.31***	-.30
	Excessive Use[a]				
Step 3					
	Internet addiction	.12	.12***	-.13***	-.33
	Social & Personal Consequences[a]				
	Excessive Use[a]				
Step 4					
	Withdrawal & Concealment	.13	.13***	-.36***	-.36
	Internet addiction[a]				
	Social & Personal Consequences[a]				
	Excessive Use[a]				

***p <.001
[a] excluded variables

4.5. T-Test Analyses of Gender and Country

In terms of internet addiction, there were significant gender differences between men and women (H_4). As seen in Table 4, men displayed more total internet addiction than women $t\,(1392) = 4.98$, $p \leq .001$, more symptoms of Withdrawal & Concealment $t\,(1392) = 5.42$, $p \leq .001$, Social & Personal Consequences $t\,(1392) = 4.19$, $p \leq .001$, and Excessive Use $t\,(1261.5) = 2.24$, $p = .03$.

Table 4

Summary of t-test results for internet addiction in man and women

		N	Mean	SD	t	df
Internet addiction	Men	593	38.21	11.16	4.98**	1392
	Women	801	34.82	11.25	4.98**	1392
Withdrawal & Concealment	Men	593	13.06	5.88	5.42**	1392
	Women	801	11.59	4.21	5.42**	1392
Social & Personal Consequences	Men	593	12.18	5.40	4.19**	1392
	Women	801	11.07	4.45	4.19**	1392
Excessive Use	Men	593	11.02	3.92	2.24*	1261.5
	Women	801	10.55	3.85	2.24*	1261.5

*p <.05 **p <.01

Significant differences were also found in Portuguese and Brazilian, in terms of internet addiction (H_6). Data about the differences in Portuguese and Brazilian in total internet addiction and its dimensions is presented in Table 5. Brazilians report more total internet addiction than Portuguese [t (1318.65) = -4.06, p ≤ .01], more symptoms of Withdrawal & Concealment [t (1357) = -2.65, p = .02], Excessive Use [t (1357) = -5.86, p ≤ .001], and slightly more Social & Personal Consequences [t (1310.1) = -2.27, p ≤ .001].

Table 5

Summary of t-test results for internet addiction in Portuguese and Brazilian

		N	Mean	SD	t	df
Internet addiction	Portugal	593	34.74	12.45	-4.06**	1318.65
	Brazil	801	37.53	12.78	-4.06**	1318.65
Withdrawal & Concealment	Portugal	593	11.83	4.85	-2.65*	1357
	Brazil	801	12.56	5.21	-2.65*	1357
Social & Personal Consequences	Portugal	593	11.21	4.89	-2.27**	1310.1
	Brazil	801	11.82	4.93	-2.27**	1310.1
Excessive Use	Portugal	593	10.08	3.66	-5.86**	1357
	Brazil	801	11.30	3.95	-5.86**	1357

*p <.05 **p <.01

4.6. ANOVA analysis of Age

Using the total IAT score and the score of the three IAT factors as dependent variables, an ANOVA analysis was performed to test the significance score between ages (H_5). Individuals were divided into five age groups: young (14 to 25 years old), young adults (26 to 33 years old), adults (34 to 40 years old), mature adults (41 to 51 years old) and seniors (51 to 83 years old). Each group included approximately 20 % of the sample (*N* = 1399).

Table 6 displays ANOVA analysis that revealed significant differences, according to age of the users, in total internet addiction [Z (4, 1355) = 14.25, p ≤ .001], Social & Personal Consequences [Z (4, 1355) = 13.96, p ≤ .001], Excessive Use [Z (4, 1355) = 10.67, p ≤ .001], and Withdrawal & Concealment [Z (4, 1355) = 9.82, p ≤ .001]. The subjects that show higher levels of internet addiction, and the three factors associated, were the younger subjects (group young). Results also show that, as the age rises, addiction to internet decreases.

Table 6

Summary of ANOVA results for internet addiction in different ages

	Ages										
	Young (*N* = 277)		Young Adults (*N* = 293)		Adults (*N* = 253)		Mature Adults (*N* = 279)		Seniors (*N* = 258)		Z
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	(4, 1355)
Internet addiction	39.69	14.30	38.20	12.93	36.81	12.62	33.37	11.48	33.42	10.51	14.25***
Withdrawal & Concealment	13.36	5.81	12.92	5.44	12.32	5.02	11.29	4.23	11.26	4.19	9.82***
Social & Personal Consequences	12.98	5.64	12.09	5.13	11.74	4.99	10.51	4.25	10.41	3.87	13.96***
Excessive Use	11.46	3.83	11.37	3.75	11.08	3.73	9.82	4.09	10.11	3.71	10.67***

***p <.001

5. Discussion

The present research study the relationship between internet addiction and self-esteem, in a cross cultural study in Portugal and Brazil. The findings are summarized, implications are discussed and recommendations for future research are presented, as follows.

The results from factor analysis show that the IAT can be characterized as exploring three dimensions of internet behavior, which we entitled: Withdrawal & Concealment, Social & Personal Consequences, and Excessive Use. Similar to the study performed by Chang & Law (2008), our results suggested that the symptoms for internet addiction, cluster together strongly in three factor. Their three factors were: withdrawal and social problems, time management and performance effects, and reality substitution. In our study, we also encountered similar symptoms, such as: withdrawal, problems or consequences, and time management or excessive use. However, our factors appear to be more organized to describe the symptoms of internet addiction. Our first factor, Withdrawal &

Concealment, comprises two blocks of items, that together evidence the negative symptoms exhibit by individuals with internet addiction (e.g. negative feelings when offline and defensiveness). The second factor, Social & Personal Consequences, includes problems that arise from a problematic internet use (e.g. social, occupational, academic and physical problems). Our third factor, Excessive Use, is composed of other symptoms that are caused by excessive use (e.g. staying online to long).

In this study, we found that internet addiction and self-esteem were significantly and negatively correlated, which suggests that subjects with low self-esteem present a higher internet addiction, and vice versa. Therefore, this study has replicated results from previous reported studies, examining the role of self-esteem in internet addiction.

More than proving that these two variables were associated, we also examined the prediction pathway that connects the two. Previous investigations have found that self-esteem can be a predictor of internet addiction, however, they did not investigated if a similar, but opposite association could occur, more specifically, if high levels of internet addiction can predict low self-esteem. Although the observed effect was not very strong, we found that low self-esteem predicts high levels of internet addiction, and also that high levels of negative feelings caused by internet addiction (i.e. Withdrawal & Concealment) can predict low self-esteem. Consequently, we discovered that it's not internet addiction itself that is damaging for self-esteem, but the negative emotions experienced by users that can lower self-esteem.

A possibility for these results, as already discussed in the theoretical background, is related to the ideal self, created when online. Some studies have provide important findings in disclosing this subject. Various researchers (Harman et al., 2005; Koronczai et al., 2013; Park et al., 2014; Yen et al., 2014; Young, 2009) indicate that to compensate for their damaged self-esteem or sense of inferiority, subjects tend to hide or disguise their real self (i.e. faking), which gives them a temporarily comfort, that ultimately worsens their self-esteem and makes them more addicted to the internet. Gamers, for instance, create an imaginary character (in the game) with the characteristics they desire, to role play and compete. They may begin to relate more to these new personas, than their own identity. Hence, creating a new identity online is dangerous, especially for subjects with poor self-esteem, as it leads to being intensely engaged in an ideal self, instead of learning to love the real self, and thereby, resulting in greater self-disparagement (Harman et al., 2005). Nonetheless, this argument still needs to be appropriately tested, and therefore, we recommend that further studies add the evaluation of the self and self-esteem, both online and offline. Moreover, it may also be important for further research, in therapeutical settings, to conform if boosting internet addicts' self-esteem, will influence the therapy outcome in a positive way.

In this study, we also evaluated age in association with internet addiction. Most studies, in this area, are confined to samples with adolescents and undergraduate students. For that reason, we decided to explore this variable with subjects of all ages. The group with the higher levels of internet addiction (and the three factor associated) were the younger subjects (from 14 to 25 years old). The results confirmed our expectation and also uncovered a tendency that has not yet been discussed in the literature. We uncovered that with the increase of age, the levels of internet addiction tend to decrease. Therefore, it is important that further studies explore this issue, in order to expose the

reasons behind it, using, for example, circumstance variables (e.g. knowledge and ease with technologies) or psychological factors (self-control or self-esteem).

The study of the variable gender revealed that man had higher levels of internet addiction than women. Thus, this study tries to contribute to the debate of which gender has a higher risk to develop internet addiction. Nevertheless, the reasons behind this result, still need to be studied. We suggest that further studies should analyze the types of activities preformed online, for the reason that previous investigations have showed that type of activities are different in man and women. For instance, man use internet more to play games, create relationships or download music or movies, while women use internet mostly to go to social networks, contact others or shop (Kim & Davis, 2008).

An interesting find in our investigation, is related to the study of the variable country, in internet addiction. We predicted that Portuguese users would have a higher level of internet addiction, however, the Brazilian users showed higher levels, particularly in total internet addiction and excessive use. Since Portuguese have more users and an easier access to internet than Brazilians (The World Bank, 2015), it is reasonable to argue that access and usage is not a complete predictor of internet addiction. In fact, other variables, such as self-esteem, can cause more vulnerability to the subject, that can, in its turn, cause him to be caught in the internet. Future research should focus on analyze the differences in internet addiction between cultures. We propose study the differences in collectivist and individualist cultures, since results from previous studies (Czincz & Hechanova, 2009; Sariyska et al., 2014) have showed that countries in Asia (collectivist cultures) have higher levels of internet addiction.

There are three main limitations for this study. One limitation of our study is its cross sectional character. For gaining further understanding of the prediction pathway and the differences in the variables in time, one should investigate these relationships in a longitudinal study. Another limitation is related to the language. The questionnaires were presented in Portuguese from Portugal that is slightly different from Portuguese from Brazilian, which could influence the comprehension of certain aspects of the questions, for Brazilians. Finally, beside its cross-cultural design, our study was not able to explore the cultural characteristics that were connected to the differences in internet use.

Despite this limitations, the significance of this study can be summarized as follows.

This investigation was conducted in Portugal and Brazil, where there is little research in this area. Subsequently, a major advantage of this study is that it assessed the relationship across two different continents, thus testing their robustness and generalizability across different countries and cultures. Another contribute that this study has, is that it widening the range of ages of subjects, we were able to observe that internet addiction diminishes with age. The factor analysis of the IAT, also allowed to explore and validate the scale for Portugal. Finally, we explored the regression analyses, on a different and unexplored prediction pathway (internet addiction predicts low self-esteem?), that uncovered that the negative feelings when offline and concealing the involvement was a predictor of self-esteem. In this matter, we considered that the study presented, can contribute to the scientific and general community.

It is important to refer that this study is not devaluating the advantages of internet, but trying to contribute to the study of a progressively more accepted pathology, with real symptoms and

consequences, that is internet addiction. And also to understand self-esteem, that is, one of the variables that can be a predictor to pathological use of the internet. In fact, as described by Shawn and Gant (2002) and Liu, Shen, Xu and Gao (2013), internet can improve self-esteem, if used properly.

6. References

Abbad, G. & Torres, C. (2002). Regressão múltipla *stepwise* e hierárquica em Psicologia Organizacional: aplicações, problemas e soluções. *Estudos de Psicologia, 7*, 19-29.

American Psychiatric Association. (2014). *Manual de Diagnóstico e Estatística das Perturbações Mentais* (Quinta Edição) (DSM 5). Lisboa: CLIMEPSI Editores.

Aydin, B., & Sari, S. (2011). Internet addiction among adolescents: the role of self-esteem, *Procedia Social and Behavioral Sciences, 15,* 3500–3505.

Barker, V. (2009). Older Adolescents' Motivations for Social Network Site Use: The Influence of Gender, Group Identify, and Collective Self-Esteem, *CyberPsychology & Behavior, 12* (2), 209-214.

Bianchi, A., & Phillips, J. (2005). Psychological Predictors of Problem Mobile Phone Use, *Cyberpsychology & Behavior, 8* (1), 39-51.

Bozoglan, B., Demirer, V., & Sahin, I. (2013). Loneliness, self-esteem, and life satisfaction as predictors of Internet addiction: A cross-sectional study among Turkish university students, *Scandinavian Journal of Psychology*, 54, 313–319.

Carbonell, X., Guardiola, H., Beranuy, M. & Bellés. A (2009). A bibliometric analysis of the scientific literature on Internet, video games, and cell phone addiction, *Journal of the Medical Liberal Association, 97* (2), 102-107.

Chabot, D. (2000). *Cultive a sua inteligência emocional* (1ª ed.). Cascais: Editora Pergaminho.

Chang, M. K. & Law, S. P. M. (2008). Factor Structure for Young's Internet Addiction Test: A confirmatory study, *Computers in Human Behavior, 24*, 2597-2619.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale: Lawrence Earlbaum.

Conti, M. A., Jardim, A. P., Hearst, N., Cordas, T. A., Tavares, H. & Abreu, C. N (2012). Avaliação da equivalência semântica e consistência interna de uma versão em português do *Internet Addiction Test (IAT), Revista de psiquiatria Clínica, 39* (3), 106-10.

Czincz, J. & Hechanova, R., (2009). Internet Addiction: Debating the Diagnosis, *Journal of Technology in Human Services, 27* (4), 257-272.

Gil-Or, O., Levi-Belz, Y. & Turel, O. (2015). The "Facebook-self": Characteristics and psychological predictors of false self-presentation on Facebook, *Frontiers in Psychology, 6* (99), 1-10.

Greenberg, J. L., Lewis, S. E. & Dodd, D. K. (1999). Overlapping Addictions and self-esteem among college men and woman, *Addictive Behaviors, 24* (4), 565-571.

Griffiths, M.D. (2000). Does internet and computer "addiction" exist? Some case study evidence, *CyberPsychology and Behavior, 3* (2), 211-218.

Harman, J.P., Hansen, C. E., Cochran, M. E. & Lindsey. C. R., (2005). Liar, Liar: Internet Faking but Not Frequency of Use Affects Social Skills, Self-Esteem, Social Anxiety, and Aggression, *CyberPsychology & Behavior, 8* (1), 1-6.

Kim, H. & Davis, K. E., (2008). Toward a comprehensive theory of problematic Internet use: Evaluating the role of self-esteem, anxiety, flow, and the self-rated importance of internet activities, *Computers in Human Behavior*, *25*, 490-500.

Koronczai, B., Kökönyei, G., Urbán, R., Kun, B., Pápay, O., Nagygyörgy, K., et al. (2013). The mediation effect of self-esteem, depression and anxiety between satisfaction with body appearance and problematic internet use, *The American Journal of Drug and Alcohol Abuse, 39* (4), 259-265.

Laconi, S., Rodgers, R. F. & Chabrol, H. (2014). The measurement of Internet addiction: A critical review of existing scales and their psychometric properties, *Computers in Human Behavior, 41*, 190-202.

LaRose, R., Lin, C. A. & Eastin, M. S. (2009). Unregulated Internet Usage: Addiction, Habit, or Deficient Self-Regulation?, *Media Psychology, 5* (3) 225-253.

Lejoyeux, M. & Weinstein, A., (2010). Internet Addiction or Excessive Internet Use, *The American Journal of Drug and Alcohol Abuse, 36* (5), 277-283.

Leung, L. (2008). Linking psychological attributes to addiction and Improper use of the mobile phone among adolescents in Hong Kong, *Journal of Children and Media, 2* (2), 93-113.

Liu, R., Shen, C., Xu, L. & Gao, Q. (2013). Children's internet information seeking, life satisfaction, and loneliness: The mediating and moderating role of self-esteem, *Computers & Education, 68*, 21-28.

Myers, D. G. (2010). *Social Psychology*. New York: McGraw-Hill International Edition.

Neto, F. (1998). *Psicologia Social* (1º vol.). Lisboa: Universidade Aberta.

Park, S., Kang, M. & Kim. E., (2014). Social relationship on problematic use (PIU) among adolescents in South Korea: A mediation model of serf-esteem and self-control, *Computers in Human Behavior, 38*, 349-357.

Parrott, A., Morinan, A., Moss, M. & Scholey, A. (2004) *Understanding Drugs and Behavior*. West Sussex: John Wiley & Sons, Ltd.

Pechorro, P., Marôco, J., Poiares, C., & Vieira, R. (2011). Validação da Escala de Auto-estima de Rosenberg com Adolescentes Portugueses em Contexto Forense e Escolar, *Arquivos de Medicina, 25* (5-6), 174-179.

Pontes, H. & Patrão. I., (2014). Estudo Exploratório Sobre as Motivações Percebidas no uso Excessivo da Internet em Adolescentes e Jovens Adultos, *Psychology, Community & Health, 3* (2), 90-102.

Reeve, J. (2010). *Motivación y emoción* (5ª ed.). Ciudad de México: Interamericana Editores, S.A.

Rosenberg, M. (1989). *Society and the adolescent self-image*. Middletown: Wesleyan University Press.

Sariyska, R., Reuter, M., Bey, K., Sha, P., Li, M., Chen, Y., et al. (2013). Self-esteem, personality and Internet Addiction: A cross-cultural comparison study, *Personality and Individual Differences, 61–62*, 28–33.

Shaw, L. H. & Gant, L. M. (2002). In defense of the internet: The relationship between internet communication and depression, loneliness, self-esteem, and perceived social support, *CyberPsychology & Behavior, 5* (2), 157-171.

Sinkkonen, H., Puhakka, H. & Meriläinen, M. (2003). Internet use and addiction among Finnish Adolescents (15-19 years), *Journal of Adolescence, 37,* 123-131.

Stieger, S. & Burger, C., (2010). Implicit and explicit self-esteem in the context of internet addiction, *CyberPsychology, Behavior, and Social Networking, 13* (6), 681-688.

The World Bank (2015, July 1). Data: Internet users (per 100 people), Retrieved from http://data.worldbank.org/indicator/IT.NET.USER.P2.

Valkenburg, P. M., Petter, J. & Shouten A. P., (2006). Friend networking sites and their relationships to adolescents' well-being and social self-esteem, *CyberPsychology & Behavior, 9* (5), 584-591

Widhanto, L., & McMurran, M. (2004). The Psychometric Properties of the Internet Addiction Test, *CyberPsychology & Behavior, 7* (4), 443-450.

Yen, C., Chou, W., Liu, T., Yang, P. & Hu, H. (2014). The association of internet addiction symptoms with anxiety, depression and self-esteem among adolescents with attention-deficit/hyperactivity disorder, *Comprehensive Psychiatry, 55*, 1601–1608

Young, K. (1998a). Internet addiction: The emergence of a new clinical disorder, *CyberPsychology and Behavior, 1* (3), 237-244.

Young, K. (1998b). *Caught in the Net: How to recognize the signs of internet addiction and a winning strategy for recovery*. New York: John Wiley & Sons, Inc.

Young, K. (2009). Internet addiction: Diagnosis and Treatment Considerations, *Journal of Contemporary Psychotherapy, 39* (4), 241–246.

Yuan, K., Qin, W., Liu, Y. & Tian, J. (2011). Internet addiction: Neuroimaging findings, *Communicative and Integrative Biology, 4* (6), 637-639.

Zhang, Y., Mei, S., Li, L., Chai, J., Li, J. & Du, H. (2015). The relationship between impulsivity and internet addiction in Chinese college students: a moderated mediation analysis of meaning in life and self-esteem, *PLOS ONE, 10* (7), 1-13.

Capítulo 3. Discussão geral

A presente dissertação teve como objetivo apresentar um artigo científico e de investigação acerca da relação da adição à internet e a autoestima, num estudo transcultural entre Portugal e o Brasil. Assim, torna-se relevante nesta fase final do trabalho apresentar algumas considerações finais acerca dos resultados alcançados.

Primeiramente é importante referir que este estudo não pretende desvalorizar as vantagens da internet, mas sim tentar contribuir para o estudo de uma patologia que é cada vez mais aceite na comunidade científica, que é a adição a internet. Como é referido no estudo, esta adição inclui sintomas reais de abstenção, negação, tolerância e leva a consequências adversas na vida pessoal e social do utilizador.

Relativamente aos resultados obtidos neste estudo, os mesmos foram ao encontro dos resultados anteriores, acerca destas duas temáticas, todavia, alguns dos dados foram inovadores, na medida em que ainda não tinham sido explorados, dados estes que irão ser apresentados de seguida.

De modo a compreender o teste de adição à internet de Young (1998ª), foi realizada uma análise fatorial, que delimitou três fatores: abstinência e negação, problemas sociais e pessoais e o uso excessivo. A análise anterior de Chang e Law (2008), também apresentou três fatores semelhantes a este estudo, no entanto os fatores deste estudo parecem estar mais organizados na descrição dos sintomas da adição à internet. Deste modo, foi possível explorar e validar a escala para Portugal e ainda, dividi-la, para uma melhor compreensão das relações entre variáveis.

No que concerne à relação entre a autoestima e adição à internet, os resultados indicaram uma correlação significativa e negativa entre estas duas variáveis, ou seja, baixos níveis de autoestima estão relacionados com altos níveis de adição à internet e vice-versa. Dado que estes resultados foram significativos procedeu-se à exploração da variável preditora. Estudos anteriores indicaram a autoestima como variável preditora, pelo que, considerámos crucial avaliar, também, a adição à internet como variável preditora. Os resultados apontaram para um círculo vicioso, em que autoestima é preditora da adição à internet e os sintomas negativos desta vão, por sua vez, causar baixa autoestima. Estudos futuros deverão analisar quais as razões que estão por de trás deste fenómeno, por exemplo avaliando as identidades criadas online (*self* ideal) e comparando os níveis de autoestima, dentro e fora da internet.

Considerámos igualmente relevante analisar três variáveis sociodemográficas relativamente à adição à internet, uma vez que as investigações em Portugal e Brasil são escassas. Relativamente à idade pudemos aferir que os jovens foram o grupo de risco para a variável adição. Os resultados revelaram também uma interessante tendência, ao avaliarmos os cinco grupos com diferentes idades. Os resultados indicaram que, com o aumento da idade, a adição a internet e os seus fatores tende a diminuir. A nossa sugestão para os próximos estudos prende-se com a exploração de variáveis, de circunstância (e.g. conhecimento) ou pessoais (e.g. autocontrolo),que possam explicar esta tendência. Nos resultados do género, os homens apresentaram maiores indícios de adição à internet do que as mulheres e, dados estes resultados, consideramos e pretendemos contribuir para o debate

contínuo que existe acerca desta variável. Um outro resultado interessante revelado por esta investigação, diz respeito à variável país e prendeu-se com o facto de que, apesar de Portugal ter um maior número de utilizadores do que o Brasil, os brasileiros demonstraram maiores níveis de adição à internet. Deste modo, será razoável assumir que o acesso e o uso da internet não são, de facto, diretamente indicativos da adição. As limitações deste estudo estão relacionadas com a não exploração das características culturais que poderão estar na base desta variância, e também com o facto de os questionários terem sido enviados em Português de Portugal, circunstância que poderá influenciar a compreensão de alguns dos aspetos relacionados com as questões.

Assim, considera-se que a investigação apresentada poderá contribuir para a comunidade científica específica e geral, e poderá, também, despertar o interesse da comunidade onde se possa fazer o uso das tecnologias de uma forma sensata.

Finalmente, gostaria de enunciar uma última consideração, que se prende com a reflexão sobre a importância desta dissertação, para a minha formação académica e crescimento pessoal. Como futura psicóloga, considero que esta dissertação me permitiu adquirir competências fundamentais para atingir alguns objetivos da prática dos profissionais de psicologia, que, não se prende apenas com o trabalho de avaliação e intervenção, mas, como está referido no Diploma do Psicólogo Europeu (2013), inclui o desenvolvimento e aplicação de princípios, conhecimentos, modelos e métodos de uma forma ética e científica, tendo em vista a promoção do desenvolvimento, bem-estar e eficácia dos indivíduos, grupos, organizações e sociedade.

Considero pertinente referir, que esta dissertação me permitiu desenvolver duas competências secundárias que um profissional nesta área deve demonstrar, por um lado, a pesquisa e desenvolvimento e, por outro, a reflexão pessoal. A competência que mais aprofundei foi, precisamente, a pesquisa e desenvolvimento, através da recolha de bibliografia e análise de dados. Através desta foi possível estabelecer novas ideias que poderão contribuir para um crescimento científico da comunidade científica e geral. Relativamente à reflexão pessoal, considero que deve constituir uma competência básica para o auto melhoramento. O desenvolvimento desta competência foi trabalhado na discussão dos dados, na qual foi necessário compreender o trabalho feito até ao momento, avaliá-lo e criar sugestões futuras para o trabalho a ser desenvolvido pelos próximos investigadores. Pelos motivos atrás dispostos, esta dissertação foi fundamental para o desenvolvimento de competências, no trabalho em psicologia.

Anexos

Anexo 1. Theoretical background of Internet Addiction and Self-Esteem

1. Internet addiction

Can you imagine spending a year without internet? Perhaps half of the people you speak to, you would not contact. You would have to hear your friend's news, directly from them or someone close to them. You would have to search your cookbook for that chocolate cake recipe. Games would not be as much fun. Research would be done manly through encyclopedia.

Internet has made life easier and every day we are more connected to it and dependent on its benefits. It has become a significant component of contemporary life. However, excessive and problematic use can result in occupational, social and physical impairment. The overuse or problematic use is commonly referred to as Internet addiction.

Internet addiction is characterized by uncontrollable and damaging use of the internet, involving excessive preoccupations regarding internet, unpleasant feelings when offline, an increase tolerance to the effects of being offline and denial of the problematic behavior, that leads to impairment or distress in interpersonal relationships, school and/or employment, and health (Czincz & Hechanova, 2009; Weinstein & Lejoyeux, 2010; Young, 1998a, 2009).

1.1. Controversy and Debate in Internet Addiction

The first conceptualization of internet addiction was presented in the 1990's however, there is still no agreement in the terminology, definition and diagnosis of this problem. This controversy appears to be related to the fact that internet addiction, hasn't been integrated in any diagnostic system, including the latest Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2014; Czincz & Hechanova, 2009; Weinstein & Lejoyeux, 2010). Therefore, the conjecture about this problem is based on several arguments.

First, the terminology used to depict internet excessive use includes: internet addiction, problematic internet use, maladaptive internet use, internet dependency, unregulated Internet usage, computer addiction, etc. (Chang & Law, 2008; Czincz & Hechanova, 2009; LaRose, Lin & Easton, 2003; Sinkkonen, Puhakka & Meriläinen, 2013). The most frequently used term in the literature, introduced by Young (1998a), is internet addiction (Carbonell, Guardiola, Beranuy & Bellés, 2009; Laconi, Rodgers & Chabrol, 2014).

Some researchers are against the use of the term "internet addiction". These investigators argue that labeling the behavior "addictive" may be harmful in addressing the problem, generating a sense of urgency that alarmist wish to profit from "curing" (LaRose et al., 2009; Warden, Phillips & Ogloff, 2004).

Most researchers recognize that internet is not in its nature addictive, however, it leads to addictive patterns of behavior, similar to other addictions (Young, 1998a). In other words, even though internet does not involve a toxicant that makes people physically dependent, it can lead to similar symptoms found in addictions. Some of these symptoms include: preoccupation or craving, tolerance, relapse, withdrawal, loss of control, life consequences and concealment (Block, 2008; LaRose et al., 2009; Young, 2009). Neuroimaging studies examining findings on PET and EEG exams, stated that internet addiction shared similar neurobiological mechanisms of substance addiction and behavior addiction (Yuan, Qin, Liu & Tian, 2011).

This debate becomes even more complex for those who consider behavior addictions, such as internet addiction and pathological gambling, as a condition affecting impulse control instead of a problem of dependence (APA, 2002; Carbonell et al., 2009).

Block (2008) proposed that internet addiction should be integrated in the fifth edition of DSM, but his suggestion was not accepted. Regardless, the American Psychiatric Association (2014) recognized the existence of non-substance related disorders, including them in the addictive disorders of DSM 5. For the time being, the only non-substance related disorder is the gambling disorder. Nevertheless, it can be considered a gateway to include other behavior addictions, such as internet addiction. Therefore, it is possible that further studies in the area considered internet addiction, as an addiction disorder, instead of an impulsive control disorder.

To summarize, excessive or problematic internet use can be defined as a behavior addiction that involves a dysfunction in the brain reward system, memory and motivation (Sinkkonen et al., 2013).

1.2. Diagnosis and Instruments of Internet Addiction

Over the years, researchers have devised different kinds of criteria and measurements to operationalize the concept of internet addiction. Some of these criteria were built upon the ideas for other addictions (gambling disorder or substance addictions), while other authors have their theoretical basis on cognitive behavior therapy (Laconi et al., 2014).

In this regard, there is still no universal diagnosis instrument for internet addiction, that shows to be adequate validity across countries. This problem occurs due to the fact that the majority of these instruments have been in only a single study or conducted in only one country. Nevertheless, it is possible to encounter some similarities, across the different instruments used, to diagnose internet addiction (Griffiths, 2000; Weinstein & Lejoyeux, 2010; Widyanto & McMurran, 2004; Young, 1998a):

- Excessive or compulsive internet use: obsessive internet use and failure to control the amount of time spent online;
- Withdrawal symptoms: feelings of anger, agitation, depression, moodiness or other negative emotions, when restricted from internet use;
- Tolerance: increase of hours of internet use, need for better computer/technology equipment or software;

- Concealment: user's attempts to hide the extent of his involvement from others;
- Adverse consequences: negative outcomes such as social, physical (e.g. poor sleep), academic, or work related problems resulting from the internet.

Among the several authors that study internet addiction, Kimberly Young is one of the most recognized and cited authors and consequently, her diagnostic criteria is the most accepted throughout the different countries (Laconi et al., 2014).

Young (1998a) proposed that internet addiction, is an impulse control disorder, comparable to pathological gambling. The author adapted eight of the ten existing criteria for pathological gambling, from DSM-IV, since two were considered non-applicable to internet addiction. The Internet Addiction Diagnostic Questionnaire (IADQ), is intended to be used as an initial screening instrument for diagnosis. The participants had to answer to eight "yes" or "no" questions. Negative feelings when offline, concealment about online use, inability to control use and negative consequences, were some of the criteria accessed that determined addictive use from normal use. Subjects were considered "dependent", when endorsing five or more of the questions in a six month period.

Internet Addiction Diagnostic Questionnaire (Young, 1998a)

1. Do you feel preoccupied with the internet (think about previous on-line activity or anticipate next on-line session)?
2. Do you feel the need to use the internet with increasing amounts of time in order to achieve satisfaction?
3. Have you repeatedly made unsuccessful efforts to control, cut back, or stop internet use?
4. Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop internet use?
5. Do you stay on-line longer than originally intended?
6. Have you jeopardized or risked the loss of significant relationship, job, educational or career opportunity because of the internet?
7. Have you lied to family members, therapist, or others to conceal the extent of involvement with the internet?
8. Do you use the internet as a way of escaping from problems or of relieving a dysphoric?

Figure 2. Internet Addiction Diagnostic Questionnaire (Young, 1998a, p. 238)

Young (1998b) also developed the Internet Addiction Test (IAT), which is a more extensive version of the IADQ. It was designed as a self-evaluation test, to help determine if the participant is addicted and what areas are jeopardized by the excessive use. The IAT, is composed of 20 items, scored on a five point Likert scale, ranging from "rarely" to "always". The score of summed items (from 20 to 100) reflect how addicted the participant is: from 20 to 39 points, the participant is considered an average internet user; from 40 to 69 points, the user is mildly addicted to the internet, demonstrating some impairment caused by its excessive usage; and from 70 to 100 points, is considered a serious addictive user, with significant problems.

Since Young (1998b) introduced IAT as a self-evaluation test in a self-help book, she did not evaluate IAT's psychometric properties. In 2004, Widyanto & McMurran (2014) conducted a study with

86 participants from the web, and concluded that the IAT is a valid and reliable instrument, that may be used in the research on Internet addiction. The authors proposed a six-factor structure for IAT: salience, excessive use, neglect work, anticipation, lack of control, neglect social life. A few years later, Chang & Law (2008) identified three factors in a sample of 410 Hong Kong university graduates: withdrawal and social problems (degree of moodiness or difficulties when restrain from the internet and interpersonal problems due to internet use); time management and performance (degree of compulsive internet use, failure to control or reduce time spent online, and academic/work problems); and reality substitute (extent to which an individual regards the internet environment as another reality). Conti et al. (2012) translated and adapted the IAT to Portuguese, demonstrating a satisfactory internal consistency.

IAT is one of the most widely used instruments in internet addiction research, with 1096 citations in 2014 (Laconi et al., 2014).

1.3. Time spent online and Subtypes of Internet Addiction

While the length of time spent online might appear to be an important consideration in the diagnosis of internet addiction, the literature has shown that is not a reliable predictor. Since the internet is not addictive by nature, there cannot be a diagnosis of addiction from simply spending more time on the internet. For instance, the extent of addictive behavior can be higher in someone using the internet four hours a day, for personal entertainment, than for someone using the internet eight hours a day, for work purposes (Chang & Law, 2008; Harman, Hansen, Cochran & Lindsey, 2005; Widyanto & McMurran, 2004).

In 1998, Young (1998a) conducted a study online with 596 subjects and identified, that dependents would spend eight hours a week online. Sixteen years later, Pontes and Patrão (2014), in a Portuguese sample, noticed that the weekly hours online have increased to a minimal of 29 among the dependents. These results are consistent with the suggestion that it is not appropriate to use solely the amount of time spent online as the criteria classifying internet addicts, because people may use the internet for different purposes. Besides, as the function of the internet is enhanced continuously, people are spending more and more time online to preform productive tasks. Therefore, the term “problematic use” of the internet might be more accurate to describe the problem, instead of the term “excessive use” (Chang & Law, 2008).

A much more reliable measurement of internet addiction is the type of activity performed online. In fact, previous studies have demonstrated that people might not be addicted to the internet itself, but to a particular internet activity (Chang & Law, 2008).

A number of models have been proposed to categorize various types of online activities. Similarity throughout these models, consists on the differences between interactive use and information-gathering use.

Weiser (2001) divided online activity into two different categories: social-affective regulation (social or interpersonal use of the internet) and goods and information acquisition (use of the internet to obtain knowledge or products).

Song, Larose, Eastin and Lin (2004) defined online activity, by distinguishing between content and process gratifications. In the content gratifications activities, the subject uses the internet to seek specific information, while in the process gratification activities, the activities fulfill the goal in itself (e.g. gaming). However, the authors' acknowledge, that this distinction is difficult, since online activities become increasingly intertwined.

Young (2009) proposed three subtypes of internet addicts, based on type of internet activity: excessive gaming, online sexual preoccupations and emailing/texting.

Excessive gaming includes all types of online activities, in any kind of device (computer, cellular phone, game consoles and television), in which subjects can play a game or gamble. Young (2009) defends that a large part of gaming is about social contact and that social aspect makes games more addictive. Gamers build relationships online with other gamers, forming groups or guilds that help each other in the game. They might feel a sense of belonging with other gamers, who share their interests. They usually use a specific language between them (a mixture of English and other words created from the game), that is difficult to understand to outsiders. Gamers show classical sighs of addiction: they feel preoccupied with gaming, lie about their use, lose interest in other activities, withdraw from family and friends to play, experience a sense of loss when they can't access the game and use gaming as a means of psychological escape (Young, 2009).

Individuals in the online sexual preoccupations category typically, engage in viewing, downloading, and trading online pornography or are involved in adult fantasy role-play rooms. Anonymity, accessibility and affordability are three primary factors associated with compulsive online sexual behavior. Due to the anonymity of online interactions, subjects start to explore and experiment with their sexuality, without the fear of being caught, feeling less accountable for their actions. Additionally, they can access this sexual material in the privacy of their home, office, or bedroom, without the physical need of visiting strip clubs or prostitutes, making it more affordable (Young, 2009). Meerkerk, Eijnden & Garretsen (2006) suggested that using the internet for sexual gratification is the most important risk factor for the development of internet addiction.

The category of emailing/texting includes emailing, texting or chatting online. Young (2009) suggests that similarly to other addictions, subjects use this behavior as a psychological escape. In this case, behavior becomes less about being a communication tool and more about temporarily running away from life's problems. Time spending emailing and texting can jeopardize important relationships from day-to-day life, for instance, with one's family, partner or friends. Furthermore, when online, people tend to feel less inhibited, accelerating intimacy. However, since people tend to glamorize their lives online, showing only parts of themselves they like and hiding or faking the other parts that they don't like, these relationships can be based on false data (Young, 2009). Chang & Law (2008) point out that addictive behaviors are especially more serious for people involved in online relationships. The anonymity of online communications, helps ensure that people who seek social contact from the internet, are not subject to any consequences in real-life. In other words, if

an individual offends someone on the internet, he can simply change online identity and start another relationship.

Young (1998a) and Pontes and Patrão (2014) highlighted that subjects not addicted to the internet use it primarily as an instrument to search information. In contrast, dependents enjoyed primarily aspects of the internet, which allowed them to meet, socialize and exchange ideas with other people. Czincz & Hechanova (2009) agree that addictive behavior occurs predominantly in the context of interactive activities online, although they accentuate that there is a greater potential for addiction for those who are involved in multiuser domains simultaneously (chat rooms, online games, gambling, cyber relations, cybersex, etc.).

1.4. Explanatory models of the manifestation of Internet Addiction

To this date, two models have tried to explain the existence of internet addiction: Davis Cognitive-Behavior Model of Pathological Internet Use (Davis, 2001) and Grohol's Model of Pathological Internet Use (Grohol, 1999).

Grohol's Model of Pathological Internet Use (Grohol, 1999) defines internet addiction as being directly related to the length of time of exposure to the internet. The model is composed of three phases. The first phase describes the initial exposure to the internet, where individuals feel a mixture of obsession and enchantment. In the second phase, subjects feel disillusioned and avoid online activity. The third phase is categorized by a balance of the two previous phases and a pattern of normal and non-problematic use develops (Grohol, 1999).

Davis Cognitive-Behavior Model of Pathological Internet Use (Davis, 2001) represents a classical stress-diathesis model to psychopathology where a psychoclinical condition, together with a stressor could lead to internet addiction. Davis (2001) claims that an individual's problematic thought pattern is the source of pathological behavior. The model also differentiates between specific and generalized internet addiction, which related to the type of online activities pursued by the individual. Specific internet addiction is related to specific online content (e.g. information gathering), while generalized internet addiction is characterized by the use of the internet for a multitude of purposes. Generalized internet addiction, tends to be related to more interactive or social functions and leads to greater severity of problematic internet behavior (Davis, 2001).

1.5. Impairments caused by Internet Addiction

One of the arguments states that internet addiction, is a serious condition, that needs scientific attention and is the problem causer in the life of the users. Subjects addicted to the internet, report that their problematic use resulted in occupational, academic, social, financial and physical problems (Chang & Law, 2008; Sinkkonen et al., 2013; Weinstein & Lejoyeux, 2010; Young, 1998a). However, there is one problem that both dependents and non-dependents share when it

comes to the use of the internet: control of the time spent online. Just like subjects addicted to the internet, non-dependents report poor time management, easily losing track of time online (Young, 1999).

Compared to the physical consequences of substance abuse, internet overuse consequences are minimal, yet notable. The physical negative effects, emerge from simply spending too much time on the internet. In fact, to accommodate such excessive use, users tend to show sleep deprivation or disturbance, excessive caffeine consumption, excessive fatigue, vulnerable immune system, sedentary lifestyle, back strain, and eyestrain (Weinstein & Lejoyeux, 2010; Young, 1998a).

Financial problems may also occur, due to internet addiction. Nevertheless, since unlimited services have been offered for reasonable prices, these problems are becoming minor, which may also encourage addictive use (Young, 1998a). Financial problems usually are related to the tolerance aspect of internet addiction. Subjects feel the need for better technology equipment or software, thereby increasingly buying more computers, smartphones, accessories, programs or games to feel temporarily satisfied.

Academic impairment, occurs due to excessive and problematic use of the internet. Students tend to spend more time on the internet, and thus ignoring school work (Chang & Law, 2008). Besides, often they spend time surfing the web on irrelevant websites or programs instead of using the computer to work on papers, or search pertinent information (Young, 1998a).

Work-related problems, like school-related problems, occur because subjects use the internet for non-business related activities. Thus, workers spend less time doing pertinent activities. Employers may respond with warnings, job suspension, or termination from employment (Chang & Law, 2008; Young, 1998a).

Marriages, dating relationships, parent-child relationships, and close friends are also noted to be disrupted, because of problematic use of the internet. Subjects become increasingly involved with the internet, spending less time with people who are close to them. Internet addicts, also exhibit classic addictive behaviors, such as lying about their use or denying about having a problem. This fact leads to relationship problems, especially when addicts are confronted with their excessive use. Dependents become angry and resentful at others who question, try to take away, or interfere with their time online (Young, 1998a). People involved in online relationships are more likely to view internet as another reality and use their computer-mediated relationships to replace social interactions in the real world (Chang & Law, 2008).

Despite the negative consequences reported among internet addicts, subjects had no desire to cut down the amount of time they spend online or have made failed attempts to reduce their use. When away from the internet, addicts start to feel preoccupied with being online again, resuming their use (Young, 1998a).

1.6. Treatment

Treatment for internet addiction, is based on interventions and strategies used in the treatment of substance abuse or compulsive disorders.

The treatment of choice in internet addiction is cognitive-behavioral therapy (Young, 2009). According to Young (2009), cognitive-behavior therapy usually requires three to four months of treatment or approximately 12 weekly sessions. The early stage of therapy is behavioral, focusing on specific behaviors and situations where the disorder causes the greatest difficulty. As therapy progresses, there is more of a focus on the cognitive assumptions and distortions that have developed and the effects of the behavior. Subjects are taught to monitor their thoughts and identify those that trigger addictive feelings and actions, while they learn new coping skills and ways to prevent a relapse.

Cognitive-behavioral therapy is focused on both computer behavior and non-computer behavior. Computer behavior, deals with actual online usage, with a primary goal of abstinence from problematic applications, while maintaining controlled usage for legitimate purposes. For example, a real estate salesman, addicted to gaming, would need to learn to abstain from games, while maintaining access to the internet, to email clients and research proprieties available to sell. Non-computer behavior, focuses on helping clients develop positive lifestyle changes for life without internet. Life activities that do not involve the computer, such as offline hobbies, social gatherings and family activities, are encouraged. Similar to food addiction, as online addicts can objectively measure success through maintaining abstinence from problematic online applications and increasing meaningful offline activities (Young, 2009).

Young (2009) suggests using a daily internet log, to evaluate computer behavior and establish a baseline for clinical treatment. Once a baseline has been established, behavior therapy is used to relearn how to use the internet, to achieve specific outcomes, such as moderate online usage and, more specifically, abstinence from problematic online applications and controlled use for legitimate purposes. The author indicates that assertion training, behavioral rehearsal, coaching, modeling and relaxation training are effective methods.

On the other hand, Kim (2008) proposes that reality therapy can also be effective to improve internet addiction. Reality therapy is designed to help individuals control their behavior and make new choices. The author designed a program with ten group sessions, each one varying from 60 to 90 minutes. Each session includes an introduction to the session goals, teaching, activities, homework assignment and sharing. The first step of the program is setting goals (session 1) and helping members understand more about internet addiction (session 2), introducing the therapy and some of its techniques (session 3 and 4). The next step, is to introduce the WDEP model (W= wants; D= direction or doing; E= evaluation; P= planning) (session 5), and internet usage patterns and their addiction triggers are identified (session 6). Then, each member makes it's own plan to recovery (session 7), a written contract (session 8), and "positive reminder cards" to use daily (session 9). Finally, the goals are discussed as well as the extent to which they have been achieved. Working in groups allows the addicts to be encouraged by others and more involved and committed in their own recovery process.

In some cases, it might also be useful to conduct a marital or family therapy, or pharmacological treatment (Weinstein & Lejoyeux, 2010).

2. Self-Esteem

Knowing one's self is one of the hardest realities for human beings. However, it is an essential part in our lives, affecting every part of it.

2.1. Self

A person's essential being, or his/her self, includes every single thing that makes a person who they are. For instance, it includes a person's personality, physical appearance, abilities, feelings, and memories (Myers, 2010).

Our view of the self, relies heavily on the concept of shared representations between self and others. To define our "self", we question who we are, how others see us, how different we are from others and can we transform ourselves in the person we want to be (Reeve, 2010).

The self involves several components: self-concept, self-knowledge, social self and self-esteem (Myers, 2010).

A person's answer to the question "who am I?" is his self-concept. Self-concept can be defined as the mental representations of individuals about themselves. In the same way we represent people (e.g.: adolescents), places (e.g.: Portugal) and events (e.g.: Mardi Gras), we also represent one's self through experiences and judgments about these experiences. Self-concept is formed daily with the feedback provided by others about our characteristics, attributes and preferences. To help us organize and retrieve our experiences, we build self-schemas. Self-schemas are generalized beliefs about ourselves, specific to a domain, and that are learned by past experiences. For example, "being shy" can be a self-scheme, because it is about one's self, it embodies a specific domain (social relationships), and was learned by past experiences (group meetings or school visits) (Reeve, 2010).

Self-knowledge includes explaining and predicting one's self. However, our self-knowledge is curiously flawed. We often do not know why we behave the way we do. This happens especially when influences upon our behavior are not conspicuous enough for any observer to see, so we too, miss them. Also, it can be easier to predict others behavior than our own, because we tend to commit fallacies that favor ourselves. In the same manner, people have difficulties predicting the intensity and duration of their future emotions (Myers, 2010).

The social self represents our group identity and the roles we play in society. For example: student, family member, and friend (Myers, 2010).

The self is social, but unique. Individuals firmly believe that the self is special in some sense, as is evident from self-serving biases, that is, the demonstrated tendency to view the self as better than average. At the same time, however, the concept of self is closely intertwined with that of the other. We make social comparisons with others to determine the degree of their characteristics (how much successful, rich or intelligent we are). In addition, people overestimate both the extent to

which their isolated actions and appearance are noted by others, and the extent to which variability in these actions are detected by their social partners (Decety & Sommerville, 2003).

In westerns cultures, individualism prevails. Individualism can be designated as defining one´s identity in terms of personal attributes rather than group identification. The adolescents in this cultures are encouraged to separate from parents, becoming self-reliant, and describing one's personal independent self, with particular abilities, traits, values, and dreams. Many people in individualistic western cultures assume an independent self. The independent self acknowledges relationships with others, while maintaining a separate identity. They value personal achievement and fulfillment, rights and liberties (Myers, 2010).

Most cultures native to Asia, Africa, and Central and South America place a greater value on collectivism. This culture gives priority to the goals of the group (often extended family or work group), defining one's identity accordingly. Subjects construct an interdependent self, that is, an identity more deeply embedded in others. With an interdependent self, one has a greater sense of belonging. There is not one, but many selves: self-with-parents, self-at-work, self-with-friends, etc. Collectivist cultures value group goals and solidarity, social responsibilities and relationships (Myers, 2010).

2.2. Defining Self-Esteem

The last part of our self is self-esteem. Self-esteem is a person's overall self-evaluation or sense of self-worth (Myers, 2010; Rosenberg, 1989). Our overall self-esteem depends of how we evaluate ourselves and our specific roles (for example: student, family member, and friend). Therefore, it is a sum of all our self-schemas and possible selves. This evaluation, is based on our thoughts, but it also contains social judgments, that are internalized (Neto, 1998).

Our self-evaluation of each personal quality can be relativity positive or negative. For instance, we can considered ourselves good friends, but bad tennis players. Usually, we are not aware how we evaluate specific parts of our self. If we considered our positive personal traits (good friend) more important than our negative personal traits (bad tennis player), we can preserve a high overall self-esteem, even though we have knowledge of our weaknesses. On the other hand, if we considered more important our negative traits than our positive traits, our overall self-esteem is low (Neto, 1998).

People who value themselves in a general way, are more likely to value particular parts of themselves. The pathway to evaluate our self-worth is from general to particular. We do not evaluate individual parts of ourselves, and decide if that makes us good or not. In fact, we see ourselves generally as good, enhancing our particular traits. For example, if we have a high self-esteem, we are more likely to value our looks, abilities and so forth (Myers, 2010).

2.3. Self-Esteem Development

The development of self-esteem and self-concept initiates in childhood. Erikson (as cited in Sprinthall & Sprinthall, 1990) proposed that self-esteem becomes a great part of self-conscience, early in the second and third year of a child's life. The author called this stage as "autonomy *vs* shame". At that time, the child emerges from a total dependency state from the person responsible for his care, and starts to explore the world around him. The physical growth allows the child to crawl, walk, run, and climb, giving him the ability to control himself and the objects he owns. This provides the child with a sense of autonomy. The way that this need for autonomy is fulfill will affect its development. If a child is excessively punished for exploring, if he is overly protected or if he constantly fail, his emotional connection will be "shame", which will be embedded in his self-esteem.

Nevertheless, it is in adolescence that identity and self-concept is mainly developed. Erikson (as cited in Sprinthall & Sprinthall, 1990) states that the thought system developed in this stage of life offers the teenager with a mechanism to understand his identity. Also, the adolescent develops the ability to understand feelings and emotions in himself and others and the capacity to comprehend other people's point of view. Elkind (as cited in Sprinthall & Sprinthall, 1990), however, describes teenagers as self-centered and egocentric. This egocentrism is complemented by an excessive conscious of himself that is vulnerable to the group pressure. Both authors agree that this stage is essential to the development of the self. Teenagers try to answer the question "who am I?" to create their self-concept, at the same time, doing an evaluation (positive or negative) to the answer to that question ("I am value/not value"), building their self-esteem (Sprinthall & Sprinthall, 1990).

Resuming self-esteem is developed through life span. In adolescence, while the identity is formed, is when self-esteem is evolving and changing. External feedback positive or negative can also affect the way we value ourselves, this is, our self-esteem (Neto, 1998).

2.4. Different Types of Self-Esteem

Self-esteem is an immense part of an individual. It can make us prosper or self-destruct. Even if the subject as a high self-esteem, it can be also damaging, when combined with narcissism (Myers, 2010).

People with low self-esteem often have problems in life. They are more vulnerable too assorted clinical problems, including anxiety, loneliness, eating disorders, and addictions (Greenberg, Lewis & Dodd, 1999; Kim & Davis, 2009; Koronczai et al., 2013). Low self-esteem leaves people vulnerable to the obstacles in life. When feeling bad or threaten, low self-esteem people often take a negative view of everything. They notice and remember others' worst behaviors and think that they don't love them. They are usually unhappy and see themselves as disappointments. In this matter, they don't make an effort to overcome hard tasks as they predict failure. Consequently, they feel anxious before an important event, task, or situation and guilty after a negative result. This attitude is a harmful and vicious circle (Myers, 2010; Neto, 1998; Reeve, 2010). Some personality traits usually

observed in subjects with low self-esteem are: unhappy, depressed, unfriendly, aggressive or fearful towards others, secluded, and afraid of being punished (Chabot, 2000).

Excessively high self-esteem can also have a dark side. High self-esteem becomes especially problematic if it crosses over into narcissism or the person shows an inflated sense of self. Most people high self-esteem value both individual achievement and relationships with others. Narcissists usually have high self-esteem, but are missing the piece about caring for others. They are not as concerned with being emotional close to others. Their self-centeredness often leads to relationship problems in a long run. Subjects with high self-esteem and high narcissism are more likely to get aggressive when their own positive self-concepts are threatened. For example, when they feel that others are being disrespectful or ridiculing them, they are more likely to act aggressively or vindictive. There seems to be an increase of subjects with high narcissism, through the years (Myers, 2010; Reeve, 2010).

High self-esteem is usually beneficial, especially if is more about feeling good with oneself, than in grades, looks, money, or others approval. This type of self-esteem is commonly entitled secure self-esteem, which leads to long term well-being (Myers, 2010). People with secure self-esteem are usually more happy, active, expressive, sociable, popular, assertive in their relationships, more confident and optimist in their opinions and judgments, more healthy, well adapted in society, and with a higher quality of life. They also demonstrate low anxiety and low self-destruction (Neto, 1998; Reeve, 2010). A person who as a good self-esteem knows how to appreciate more each one of his experiences. They are competent in different fields and domains (Myers, 2010).

People are motivated to maintain their level of self-esteem, either low or high, and, for that they use several techniques. Neto (1998) describes four techniques: manipulation of the evaluations (we associate with people who share our perceptions of ourselves), selective information process (we value what is consistent with our self-evaluations), selective social comparison (we compare ourselves with those who are similar to us), and selective identity commitment (we give a greater importance to identities which we consider admirable).

2.5. Ideal Self

Self-concept includes, not only the self-schemas about who people currently are, but also who they might become, that is, their possible self's. The possible selves includes the visions of the self they dream of becoming (for example: the rich self, thine self, passionately loved and loving self, etc.) and also includes the self they fear becoming (for example: the underemployed, unloved self, academically failed self, etc.) (Myers, 2010). Such possible selves motivates people to follow their vision of the life they long for. Among this possible selves, is created an idea of what the ideal identity should be. For instance, they can dream about their emotional and social life, professional success, physical self, etc. (Reeve, 2010).

When the ideal self is created, they have to confront their ideal self with their real self. The discovery of having two distinctive selves, can be worse than the comparison between the two. This happens, when the subject gives a greater importance of not being is ideal self, than how much effort

it takes to get there. When the individual actually compares the two selves, there can be two outcomes: if is ideal self is close to is real self, he feels proud of himself and probably will have a high self-esteem, if his real self is far from the ideal, he feels guilty and responsible and it can affect negatively his self-esteem. This comparison can bring a bigger or lower satisfaction and well-being (Chabot, 2000).

Frequently people try to appear to others in a different way that does not correspond to the reality, but closer to their ideal self. By exhibiting a false image of themselves, people delude others, but also themselves. The image that is created is entitled imagined self. For example, a sexually unsure individual can try to appear to others as a very sexually unrestricted and confident man. After the imagined self is presented to others, subjects attempt to preserve this image, defending it when it is called into question, with every scheme they can remember (Chabot, 2000).

Trying to achieve the ideal self can be beneficial. The problem arises when we do not accept our flaws, errors and mistakes. We do not accept the reality as it is, that is, our real self. In fact, it is harmful to try to be perfect, always right and loved by everyone. Subjects with high self-esteem acknowledge they are not perfect and they accept it. However, if the subject has a low self-esteem and he was taught to be perfect and better that everyone, he can be disappointed when he sees him as he really is (Chabot, 2000).

2.6. Culture and Self-esteem

Depending if a person is from an individualistic culture or a collectivistic culture, so his self-concept and self-esteem diverges. Self-esteem in collectivist cultures correlates closely with "what others think of me and my group". Self-concept is malleable (context-specific) rather than stable (enduring across situations). For those in individualistic cultures, self-esteem is more personal and less relational. When their personal identity is threatened, they feel angrier and gloomier than when someone threatens their collective identity (Myers, 2010).

People in individualistic countries persist more when succeeding, because success elevates self-esteem. On the other hand, people in collectivist countries persist more on tasks when they are failing. Western individuals like to make comparisons with others that are doing worse than them, because it elevates their self-esteem. They feel handsome when others seem homely, smart when others seem dull, caring when seem callous. Collectivists make comparison often upward, with those doing better, in ways that facilitate self-improvement (Myers, 2010).

Since collectivist cultures value group and feel that they belong with that group, conflicts are frequently between groups. Individualistic cultures breed more conflict between individuals, for example crime and divorce (Myers, 2010).

In individualistic cultures, parents, educators, friends, children, employers, etc. oblige individuals to be their ideal self. Fathers want children to be perfect, children want parents to be role models, employers want exemplary employees, employees want good bosses, educators want excellent students, and students want better teachers. Society values mostly people who are the

first, “number one”, or the heroes. To correspond to that, people often try to appear better than they really are. They display their imaginary self (Chabot, 2000).

3. References

American Psychiatric Association. (2002). *Manual de Diagnóstico e Estatística das Perturbações Mentais*, (4ª Edição, Texto Revisto) (DSM-IV-TR). Lisboa: CLIMEPSI Editores.

American Psychiatric Association. (2014). *Manual de Diagnóstico e Estatística das Perturbações Mentais* (Quinta Edição) (DSM 5). Lisboa: CLIMEPSI Editores.

Block, J. J. (2008). Issues for DSM-V: Internet Addiction, *American Journal of Psychiatry*, *165* (3), 306-307.

Carbonell, X., Guardiola, H., Beranuy, M. & Bellés. A (2009). A bibliometric analysis of the scientific literature on Internet, video games, and cell phone addiction, *Journal of the Medical Liberal Association, 97* (2), 102-107.

Chabot, D. (2000). *Cultive a sua inteligência emocional* (1ª ed.). Cascais: Editora Pergaminho.

Chang, M. K. & Law, S. P. M. (2008). Factor Structure for Young’s Internet Addiction Test: A confirmatory study, *Computers in Human Behavior, 24*, 2597-2619

Czincz, J. & Hechanova, R., (2009). Internet Addiction: Debating the Diagnosis, *Journal of Technology in Human Services, 27* (4), 257-272.

Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior, 17*, 187-195.

Decety, J. & Sommerville, J. A. (2003). Shared representations between self and other: A social cognitive neuroscience view, *Trends in Cognitive Sciences, 7* (12), 527-533.

Greenberg, J. L., Lewis, S. E. & Dodd, D. K. (1999). Overlapping Addictions and self-esteem among college men and woman, *Addictive Behaviors, 24* (4), 565-571.

Griffiths, M.D. (2000). Does internet and computer “addiction” exist? Some case study evidence, *Cyberphychology and Behavior, 3* (2), 211-218.

Grohol, J. M. (1999). Too much time online: Internet addiction or health social interaction. *Cyberpsychology and Behavior,* 2, 395-401.

Harman, J.P., Hansen, C. E., Cochran, M. E. & Lindsey. C. R., (2005). Liar, Liar: Internet Faking but Not Frequency of Use Affects Social Skills, Self-Esteem, Social Anxiety, and Aggression, *CyberPsychology & Behavior, 8* (1), 1-6.

Koronzai, B., Kökönyei, G., Urbán, R., Kun, B., Pápay. O., Nagygyyörgy, K, et al. (2013). The mediating effect of self-esteem, depression and anxiety between satisfaction with body appearance and problematic internet use, *The American Journal of Drug and Alcohol Abuse, 39* (4), 259-265.

Laconi, S., Rodgers, R. F. & Chabrol, H. (2014). The measurement of Internet addiction: A critical review of existing scales and their psychometric properties, *Computers in Human Behavior, 41*, 190-202.

LaRose, R., Lin, C. A. & Eastin, M. S. (2009). Unregulated Internet Usage: Addiction, Habit, or Deficient Self-Regulation?, *Media Psychology, 5* (3) 225-253.

Lejoyeux, M. & Weinstein, A., (2010). Internet Addiction or Excessive Internet Use, *The American Journal of Drug and Alcohol Abuse, 36* (5), 277-283.

Meerkerk, G., Fijnden, R., & Garretsen, H. (2006). Predicting compulsive Internet use: It's all about sex! *CyberPsychology and Behavior, 9*, 95-103.

Myers, D. G. (2010). *Social Psychology*. New York: McGraw-Hill International Edition.

Neto, F. (1998). *Psicologia Social* (1º vol.). Lisboa: Universidade Aberta.

Pontes, H. & Patrão. I., (2014). Estudo Exploratório Sobre as Motivações Percebidas no uso Excessivo da Internet em Adolescentes e Jovens Adultos, *Psychology, Community & Health, 3* (2), 90-102.

Reeve, J. (2010). *Motivación y emoción* (5ª ed.). Ciudad de México: Interamericana Editores, S.A.

Sinkkonen, H., Puhakka, H. & Meriläinen, M. (2003). Internet use and addiction among Finnish Adolescents (15-19 years), *Journal of Adolescence, 37,* 123-131.

Sprinthall, N. A. & Sprinthall, R. C. (1990). *Psicologia Educacional*. Lisboa: McGraw Hill.

Warden, N. L., Phillips, J. G.& Ogloff, J. R. (2004). Internet addiction, *Psychiatry, Psychology and Law, 11* (2), 280-295.

Widhanto, L., & McMurran, M. (2004). The Psychometric Properties of the Internet Addiction Test, *CyberPsychology & Behavior, 7* (4), 443-450.

Young, K. (1998a). Internet addiction: The emergence of a new clinical disorder, *CyberPsychology and Behavior, 1* (3), 237-244.

Young, K. (1998b). *Caught in the Net: How to recognize the signs of internet addiction and a winning strategy for recovery*. New York: John Wiley & Sons, Inc.

Young, K. (2009). Internet addiction: Diagnosis and Treatment Considerations, *Journal of Contemporary Psychotherapy, 39* (4), 241–246.

Yuan, K., Qin, W., Liu, Y. & Tian, J. (2011). Internet addiction: Neuroimaging findings, *Communicative and Integrative Biology, 4* (6), 637-639.

Anexo 2. Computers in Human Behavior: Author Information Pack

COMPUTERS IN HUMAN BEHAVIOR

ELSEVIER

AUTHOR INFORMATION PACK

TABLE OF CONTENTS

ISSN: 0747-5632

DESCRIPTION

Computers in Human Behavior is a scholarly journal dedicated to examining the use of **computers** from a **psychological** perspective. Original theoretical works, research reports, literature reviews, software reviews, book reviews and announcements are published. The journal addresses both the use of computers in **psychology**, **psychiatry** and related disciplines as well as the psychological impact of computer use on individuals, groups and society. The former category includes articles exploring the use of computers for professional practice, training, research and theory development. The latter category includes articles dealing with the psychological effects of computers on phenomena such as human development, learning, cognition, personality, and social interactions. The journal addresses **human interactions with computers**, not computers *per se*. The computer is discussed only as a medium through which human behaviors are shaped and expressed. The primary message of most articles involves information about human behavior. Therefore, professionals with an interest in the psychological aspects of computer use, but with limited knowledge of computers, will find this journal of interest.

Benefits to authors
We also provide many author benefits, such as free PDFs, a liberal copyright policy, special discounts on Elsevier publications and much more. Please click here for more information on our author services.

Please see our Guide for Authors for information on article submission. If you require any further information or help, please visit our support pages: http://support.elsevier.com

AUDIENCE

Psychologists, Cognitive Scientists, Educational Psychologists.

IMPACT FACTOR

2014: 2.694 © Thomson Reuters Journal Citation Reports 2015

ABSTRACTING AND INDEXING

Bioengineering Abstracts
COMPENDEX
Cambridge Scientific Abstracts
Computer Publishers & Publications
Current Contents
Current Contents/Social & Behavioral Sciences
Current Index to Journals in Education
Information Science Abstracts
International Bibliography Book Reviews
International Bibliography of Periodical Literature
Library and Information Science Abstracts
EMBASE
Engineering Index
Engineering Meetings
Ergonomics Abstracts
IBZ and IBR
PsycINFO Psychological Abstracts
PsycLIT
Psychology Abstracts
SSSA/CISA/ECA/ISMEC
Social Sciences Citation Index
Sociological Abstracts
Software Reviews on File
World Patent Information
Scopus
MathEduc

EDITORIAL BOARD

GUIDE FOR AUTHORS

Your Paper Your Way

We now differentiate between the requirements for new and revised submissions. You may choose to submit your manuscript as a single Word or PDF file to be used in the refereeing process. Only when your paper is at the revision stage, will you be requested to put your paper in to a 'correct format' for acceptance and provide the items required for the publication of your article.

To find out more, please visit the Preparation section below.

INTRODUCTION

Computers in Human Behavior is a scholarly journal dedicated to examining the use of computers from a psychological perspective. Original theoretical works, research reports, literature reviews, software reviews, book reviews and announcements are published. The journal addresses both the use of computers in psychology, psychiatry and related disciplines as well as the psychological impact of computer use on individuals, groups and society. The former category includes articles exploring the use of computers for professional practice, training, research and theory development. The latter category includes articles dealing with the psychological effects of computers on phenomena such as human development, learning, cognition, personality, and social interactions. The journal addresses human interactions with computers, not computers per se. The computer

is discussed only as a medium through which human behaviors are shaped and expressed. The primary message of most articles involves information about human behavior. Therefore, professionals with an interest in the psychological aspects of computer use, but with limited knowledge of computers, will find this journal of interest.

Types of contributions
Original theoretical works, research reports, literature reviews, software reviews, book reviews and announcements.

BEFORE YOU BEGIN

Ethics in publishing

For information on Ethics in publishing and Ethical guidelines for journal publication see http://www.elsevier.com/publishingethics and http://www.elsevier.com/journal-authors/ethics.

Conflict of interest

All authors are requested to disclose any actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately influence, or be perceived to influence, their work. See also http://www.elsevier.com/conflictsofinterest. Further information and an example of a Conflict of Interest form can be found at: http://help.elsevier.com/app/answers/detail/a_id/286/p/7923.

Submission declaration and verification

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see http://www.elsevier.com/sharingpolicy), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service CrossCheck http://www.elsevier.com/editors/plagdetect.

Changes to authorship

This policy concerns the addition, deletion, or rearrangement of author names in the authorship of accepted manuscripts:
Before the accepted manuscript is published in an online issue: Requests to add or remove an author, or to rearrange the author names, must be sent to the Journal Manager from the corresponding author of the accepted manuscript and must include: (a) the reason the name should be added or removed, or the author names rearranged and (b) written confirmation (e-mail, fax, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed. Requests that are not sent by the corresponding author will be forwarded by the Journal Manager to the corresponding author, who must follow the procedure as described above. Note that: (1) Journal Managers will inform the Journal Editors of any such requests and (2) publication of the accepted manuscript in an online issue is suspended until authorship has been agreed.
After the accepted manuscript is published in an online issue: Any requests to add, delete, or rearrange author names in an article published in an online issue will follow the same policies as noted above and result in a corrigendum.

Copyright

Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (for more information on this and copyright, see http://www.elsevier.com/copyright). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts

for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations (please consult http://www.elsevier.com/permissions). If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases: please consult http://www.elsevier.com/permissions.

For open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (for more information see http://www.elsevier.com/OAauthoragreement). Permitted third party reuse of open access articles is determined by the author's choice of user license (see http://www.elsevier.com/openaccesslicenses).

Author rights
As an author you (or your employer or institution) have certain rights to reuse your work. For more information see http://www.elsevier.com/copyright.

Role of the funding source
You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Funding body agreements and policies
Elsevier has established a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some authors may also be reimbursed for associated publication fees. To learn more about existing agreements please visit http://www.elsevier.com/fundingbodies.

Open access
This journal offers authors a choice in publishing their research:

Open access
• Articles are freely available to both subscribers and the wider public with permitted reuse

• An open access publication fee is payable by authors or on their behalf e.g. by their research funder or institution

Subscription
• Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs (http://www.elsevier.com/access).

• No open access publication fee payable by authors.

Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards.

For open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses:

Creative Commons Attribution (CC BY)
Lets others distribute and copy the article, create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), include in a collective work (such as an anthology), text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation.

Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND)

For non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

The open access publication fee for this journal is **USD 1800**, excluding taxes. Learn more about Elsevier's pricing policy: http://www.elsevier.com/openaccesspricing.

Green open access

Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our green open access page for further information (http://elsevier.com/greenopenaccess). Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is the embargo period and begins from the publication date of the issue your article appears in.

This journal has an embargo period of 24 months.

Language (usage and editing services)

Please write your text in good English (American or British usage is accepted, but not a (http://support.elsevier.com) for more information.
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific.
English may wish to use the English Language Editing service available from Elsevier's WebShop (http://webshop.elsevier.com/languageediting/) or visit our customer support site (http://support.elsevier.com) for more information.

Submission

Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

Submit your article
Please submit your article via http://ees.elsevier.com/chb/

PREPARATION

NEW SUBMISSIONS

Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process.
As part of the Your Paper Your Way service, you may choose to submit your manuscript as a single file to be used in the refereeing process. This can be a PDF file or a Word document, in any format or lay-out that can be used by referees to evaluate your manuscript. It should contain high enough quality figures for refereeing. If you prefer to do so, you may still provide all or some of the source files at the initial submission. Please note that individual figure files larger than 10 MB must be uploaded separately.

References

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

Formatting requirements

There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions.
If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes.
Divide the article into clearly defined sections.

Figures and tables embedded in text
Please ensure the figures and the tables included in the single file are placed next to the relevant text in the manuscript, rather than at the bottom or the top of the file.

REVISED SUBMISSIONS

Use of word processing software
Regardless of the file format of the original submission, at revision you must provide us with an editable file of the entire article. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier: http://www.elsevier.com/guidepublication). See also the section on Electronic artwork.
To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

Article structure

Subdivision - numbered sections
Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction
State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods
Provide sufficient detail to allow the work to be reproduced. Methods already published should be indicated by a reference: only relevant modifications should be described.

Theory/calculation
A Theory section should extend, not repeat, the background to the article already dealt with in the Introduction and lay the foundation for further work. In contrast, a Calculation section represents a practical development from a theoretical basis.

Results
Results should be clear and concise.

Discussion
This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions
The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

- ***Title.*** Concise and informative. Titles are often used in information-retrieval systems.

Avoid abbreviations and formulae where possible.

• ***Author names and affiliations.*** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.

• ***Corresponding author.*** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. **Ensure that the e-mail address is given and that contact details are kept up to date by the corresponding author.**

• ***Present/permanent address.*** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract
A concise and factual abstract is required and should not be longer than 200 words. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Graphical abstract
Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. See http://www.elsevier.com/graphicalabstracts for examples.
Authors can make use of Elsevier's Illustration and Enhancement service to ensure the best presentation of their images and in accordance with all technical requirements: Illustration Service.

Highlights
Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). See http://www.elsevier.com/highlights for examples.

Keywords
Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations
Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements
Do not include acknowledgements on the title page, as a footnote to the title or otherwise.

In a separate file to the manuscript, list those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.)

Math formulae

Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article.

Artwork

Electronic artwork General points

• Make sure you use uniform lettering and sizing of your original artwork.

• Preferred fonts: Arial (or Helvetica), Times New Roman (or Times), Symbol, Courier.

• Number the illustrations according to their sequence in the text.

• Use a logical naming convention for your artwork files.

• Indicate per figure if it is a single, 1.5 or 2-column fitting image.

• For Word submissions only, you may still provide figures and their captions, and tables within a single file at the revision stage.

• Please note that individual figure files larger than 10 MB must be provided in separate source files. A detailed guide on electronic artwork is available on our website: http://www.elsevier.com/artworkinstructions.

You are urged to visit this site; some excerpts from the detailed information are given here.

Formats

Regardless of the application used, when your electronic artwork is finalized, please 'save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):
EPS (or PDF): Vector drawings. Embed the font or save the text as 'graphics'.
TIFF (or JPG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi. TIFF (or JPG): Bitmapped line drawings: use a minimum of 1000 dpi.
TIFF (or JPG): Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required.

Please do not:

• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); the resolution is too low.

• Supply files that are too low in resolution.

• Submit graphics that are disproportionately large for the content.

Color artwork

Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) regardless

of whether or not these illustrations are reproduced in color in the printed version. **For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article**. Please indicate your preference for color: in print or online only. For further information on the preparation of electronic artwork, please see http://www.elsevier.com/artworkinstructions.
Please note: Because of technical complications that can arise by converting color figures to 'gray scale' (for the printed version should you not opt for color in print) please submit in addition usable black and white versions of all the color illustrations.

Figure captions
Ensure that each illustration has a caption. A caption should comprise a brief title (**not** on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables
Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules.

References

Citation in text
Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Web references
As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

References in a special issue
Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference management software
Most Elsevier journals have a standard template available in key reference management packages. This covers packages using the Citation Style Language, such as Mendeley (http://www.mendeley.com/features/reference-manager) and also others like EndNote (http://www.endnote.com/support/enstyles.asp) and Reference Manager (http://refman.com/support/rmstyles.asp). Using plug-ins to word processing packages which are available from the above sites, authors only need to select the appropriate journal template when preparing their article and the list of references and citations to these will be formatted according to the journal style as described in this Guide. The process of including templates in these packages is constantly ongoing. If the journal you are looking for does not have a template available yet, please see the list of sample references and citations provided in this Guide to help you format these according to the journal style.

If you manage your research with Mendeley Desktop, you can easily install the reference style for this journal by clicking the link below: http://open.mendeley.com/use-citation-

style/computers-in-human-behavior
When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice. For more information about the Citation Style Language, visit http://citationstyles.org.

Reference formatting
There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct. If you do wish to format the references yourself they should be arranged according to the following examples:

Reference style
Text: Citations in the text should follow the referencing style used by the American Psychological Association. You are referred to the Publication Manual of the American Psychological Association, Sixth Edition, ISBN 978-1-4338-0561-5, copies of which may be ordered from http://books.apa.org/books.cfm?id=4200067 or APA Order Dept., P.O.B. 2710, Hyattsville, MD 20784, USA or APA, 3 Henrietta Street, London, WC3E 8LU, UK.
List: references should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.
Examples:
Reference to a journal publication:
Van der Geer, J., Hanraads, J. A. J., & Lupton, R. A. (2010). The art of writing a scientific article.
Journal of Scientific Communications, 163, 51–59. Reference to a book: Strunk, W., Jr., & White, E. B. (2000). *The elements of style.* (4th ed.). New York: Longman, (Chapter 4).
Reference to a chapter in an edited book:
Mettam, G. R., & Adams, L. B. (2009). How to prepare an electronic version of your article. In B. S. Jones, & R. Z. Smith (Eds.), *Introduction to the electronic age* (pp. 281–304). New York: E-Publishing Inc.

Video data
Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the files in one of our recommended file formats with a preferred maximum size of 150 MB. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect: http://www.sciencedirect.com. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages at http://www.elsevier.com/artworkinstructions. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

AudioSlides
The journal encourages authors to create an AudioSlides presentation with their published article. AudioSlides are brief, webinar-style presentations that are shown next to the online article on ScienceDirect. This gives authors the opportunity to summarize their research in their own words and to help readers understand what the paper is about. More information and examples are available at http://www.elsevier.com/audioslides. Authors of this journal will automatically receive an invitation e-mail to create an AudioSlides presentation after

acceptance of their paper.

Supplementary material

Elsevier accepts electronic supplementary material to support and enhance your scientific research. Supplementary files offer the author additional possibilities to publish supporting applications, high-resolution images, background datasets, sound clips and more. Supplementary files supplied will be published online alongside the electronic version of your article in Elsevier Web products, including ScienceDirect: http://www.sciencedirect.com. In order to ensure that your submitted material is directly usable, please provide the data in one of our recommended file formats. Authors should submit the material in electronic format together with the article and supply a concise and descriptive caption for each file. For more detailed instructions please visit our artwork instruction pages at http://www.elsevier.com/artworkinstructions.

Submission checklist

The following list will be useful during the final checking of an article prior to sending it to the journal for review. Please consult this Guide for Authors for further details of any item.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:

• E-mail address

• Full postal address

All necessary files have been uploaded, and contain:

• Keywords

• All figure captions

• All tables (including title, description, footnotes) Further considerations

• Manuscript has been 'spell-checked' and 'grammar-checked'

• All references mentioned in the Reference list are cited in the text, and vice versa

• Permission has been obtained for use of copyrighted material from other sources (including the Internet)

Printed version of figures (if applicable) in color or black-and-white

• Indicate clearly whether or not color or black-and-white in print is required.

• For reproduction in black-and-white, please supply black-and-white versions of the figures for printing purposes.

For any further information please visit our customer support site at http://support.elsevier.com.

AFTER ACCEPTANCE

Use of the Digital Object Identifier

The Digital Object Identifier (DOI) may be used to cite and link to electronic documents. The DOI consists of a unique alpha-numeric character string which is assigned to a document by the publisher upon the initial electronic publication. The assigned DOI never changes. Therefore, it is an ideal medium for citing a document, particularly 'Articles in press' because they have not yet received their full bibliographic information. Example of a correctly given DOI (in URL format; here an article in the journal *Physics Letters B*):

http://dx.doi.org/10.1016/j.physletb.2010.09.059

When you use a DOI to create links to documents on the web, the DOIs are guaranteed never to change.

Online proof correction

Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process

by allowing you to directly type your corrections, eliminating the potential introduction of errors.
If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.
We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

Offprints

The corresponding author, at no cost, will be provided with a personalized link providing 50 days free access to the final published version of the article on ScienceDirect. This link can also be used for sharing via email and social networks.
For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's WebShop (http://webshop.elsevier.com/myarticleservices/offprints).
Authors requiring printed copies of multiple articles may use Elsevier WebShop's 'Create Your Own Book' service to collate multiple articles within a single cover (http://webshop.elsevier.com/myarticleservices/booklets).

AUTHOR INQUIRIES

You can track your submitted article at http://www.elsevier.com/track-submission. You can track your accepted article at http://www.elsevier.com/trackarticle. You are also welcome to contact Customer Support via http://support.elsevier.com.