Problematizing excessive online gaming and its psychological predictors

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ARTICLE INFO

ABSTRACT

This study problematizes the common methodology in studies on excessive internet use where psychological characteristics are sought as unique predictors of negative outcomes. It suggests that some predictors may be significant only by virtue of being examined in isolation. In an attempt to add to this methodology the present study explored motivations for a particular online activity, MMO gaming, and the association with excessive use. The study used survey data from players of World of Warcraft (WoW), a popular MMO game. The psychological characteristics investigated were based on previous studies of excessive internet use and included social anxiety, loneliness and stress. The motivations were achievement, escapism and social interaction. The results revealed that although loneliness and social anxiety were correlated with excessive use, they lost significance when stress was controlled for. Furthermore, all psychological predictors lost significance when escapism and achievement were controlled for. These results suggest that psychological characteristics only have an indirect effect on negative outcomes and that this relationship can be better explained by motivations acting as a mediating variable. Based on these results an alternative conceptualization was offered, termed *compensatory internet use*, emphasizing that excessive use may be more usefully framed and investigated as a coping strategy rather than compulsive behaviour.

1. Introduction

Excessive internet use[1] is typically described as a state where the individual has lost control of his/her internet use and keeps using internet excessively despite experiencing negative outcomes (Young, 1998). Most often reports concern cases where individuals lose sleep or skip meals because they spend time on the internet, or where the internet use has resulted in conflicts with family members and important others, or led to the detriment of a job or educational career. Initial research on the negative outcomes of internet use was conducted by Young (1998) who conceptualized the phenomenon as an impulse-control disorder, deriving diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM) diagnosis for pathological gambling. Young contended that the DSM-IV diagnosis of pathological gambling was most akin to the pathological nature of excessive internet use and that adopting the criteria would be helpful in clinical settings and stimulate further research.

Researchers have since explored a number of psychological characteristics in order to find unique predictors for excessive internet use. Examples are depression and suicidal ideation (Kim et al., 2006), self-esteem and sensation-seeking (Armstrong, Phillips, & Saling, 2000; Widyanto & McMurran, 2004), loneliness and shyness (Caplan, 2002, 2003, 2005; Whang, Lee, & Chang, 2003), locus of control (Chak & Leung, 2004), attitudes toward computer networks (Tsai & Lin, 2001), attention-deficit/hyperactivity/impulsivity symptoms (Yoo, Cho, & Ha, 2004), psychosocial well-being (e.g., Caplan, Williams, & Yee, 2009; Lemmens, Valkenburg, & Peter, 2011; Young & de Abreu, 2011) as well as the association with various personality traits (e.g., Leung, 2007; Lo, Wang, & Fang, 2005; Whang et al., 2003).

This paper problematizes the common research methodology in studies on excessive internet use. The methodology follows a framework whereby psychological characteristics are theorized, then investigated, as unique predictors of excessive use. I propose in this paper that instead of the compulsive nature that excessive use is ascribed in the literature, it is better understood as a coping strategy grounded in understandable (but not always healthy) motivations. Empirical data will be offered to support the proposal that research should move away from a methodology where singular psychological characteristics are sought as the unique predictors of excessive internet use. In addition to the necessity of controlling for a broader set of influencing factors, this paper will show that including motivational factors is helpful in explaining why certain individuals use the internet excessively despite experiencing negative outcomes. This approach facilitates much needed theory building about why excessive use occurs, a task surprisingly

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[1] Or internet addiction, compulsive internet use, problematic internet use – labels that have been used interchangeably to describe more or less the same concept (Widyanto & Griffiths, 2006).

neglected despite the number of studies conducted in the field (Widyanto & Griffiths, 2006).

Since internet use has significant nuances and should not be treated as a monolithic activity (Bergmark, Bergmark, & Findahl, 2011; Shen & Williams, 2011), the empirical section will focus on a particular internet activity; the popular Massively Multiplayer Online (MMO) game genre. MMO games have featured prominently in the discourse on excessive use (e.g., Caplan et al., 2009; Kuss, Louws, & Reinout, 2012; Smahel & Blinka, 2011; Williams, Yee, & Caplan, 2008; Young & de Abreu, 2011) and players have been suggested as particularly vulnerable to negative outcomes (Kuss et al., 2012; Lo et al., 2005; Ng & Wiemer-Hastings, 2005). This activity provides a starting point for theorizing the relationship between psychological characteristics, motivations and excessive internet use.

2. Background

As Davies (1992) has suggested, approaching the phenomenon of "intense use" from a medicalized perspective of addiction and compulsion can be more harmful than helpful because it situates the researcher within too narrow a framework of thought for a phenomenon that is social, cultural and psychological. Indeed, research on excessive internet use has focused on its psychological predictors and considered few alternative explanations.

The main problem following this approach was that researchers found significant associations with a great number of psychological characteristics and presented these as stable predictors of excessive use. This may seem like a promising result, but in the end it has only diluted the literature. Knowing that almost all psychological characteristics, when examined in isolation, statistically contribute to the likelihood of experiencing negative outcomes of internet use has not contributed much to a theory of *why* this happens. Furthermore, the characteristics may be significant only by virtue of being examined in isolation from other variables. This leads to the first hypothesis and research question that will be tested in this paper.

H1. Psychological characteristics are significantly related to negative outcomes of use only when examined separately.

RQ1. Do psychological characteristics relate significantly to negative outcomes when other psychological characteristics are controlled for?

This approach needs to be problematized because psychological screening of an individual will invariably discover several significant predictors of excessive internet use without offering any substantial knowledge of their meaning or the relationship with other predictors, rendering this method less useful both for research and clinical practice. This calls for alternative approaches to investigating excessive internet use that are not solely grounded in an investigation of psychological characteristics. While the psychological characteristics of the individual are likely to be part of the issue, as a focal point these seem to lead to a dead end in terms of useful diagnoses and theory building. There has been plenty of speculation about why certain characteristics are associated with excessive use but such speculation is untenable when too many characteristics emerge as significant predictors. The empirical section of this paper will focus on the motivations for MMO play as an alternative complement, suggesting that these contribute valuable knowledge about continued excessive use in the presence of negative outcomes. When exploring the association between psychological characteristics and excessive use, the researcher is forced to speculate about why a characteristic compels an individual to go online. Motivations for internet use adds an important dimension by establishing the connection between psychological characteristics and motivations for use, thereby offering more substance to the discussion of why people are motivated to use the internet excessively and how this relates to their psychological state. Motivations for use provide a context for theorizing excessive use outside a framework of addiction and compulsion, while retaining the important point that some people keep using the internet despite suffering negative outcomes. From a clinical perspective, motivations for use may be changeable while psychological characteristics are more stable over time. If motivations play a crucial role in excessive use, understanding where the motivations stem from would be useful for clinical intervention.

The proposed alternative approach, which I will refer to as *compensatory internet use*, derives partly from Young (1998) who suggested that internet use can serve compensatory purposes. This is an idea often mentioned in the literature on excessive internet use (e.g., Armstrong et al., 2000; Bessière, Kiesler, Kraut, & Boneva, 2004; Caplan & High, 2011; Chak & Leung, 2004; Griffiths, 2000; Whang et al., 2003; Widyanto & Griffiths, 2006; Young, 1998, 2009; Young & de Abreu, 2011) but rarely empirically investigated (Caplan et al., 2009 is a notable exception). Young suggested that individuals could have motives for going online that are based on a desire to fulfill unmet real life needs or alleviate dysphoric moods. This is different from compulsive behaviour in that compensatory use may imply conscious action whereas compulsive behaviour implies loss of control. This interpretation has major implications for how the study of negative outcomes of internet use is conducted, and so far the interpretation and research methodology has centered on loss of control, a framework of addiction and its psychological predictors. As a counterpoint, Shen and Williams (2011) stated that:

> "It is clear now that the effects of [internet use] are very much dependent on the purposes, contexts, and individual characteristics of users. In other words, who they are, with whom they use the media, **and for what purposes** collectively explain a sizable portion of the consequences of use."
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> (p. 143, emphasis added)

Shen and Williams highlight the importance of incorporating details about motivations for internet use in studies concerned with effects, as the outcomes are likely a product of several factors in addition to psychological characteristics. This approach may account for the possibility that excessive internet occurs because the internet has something to offer that the individual wants or needs. As a coping behaviour, this could be unhealthy in the long run; but that need not align it with the compulsive nature of addictions. As Williams et al. (2008) stated there needs to be a transition in effects studies from simple direct effects models (i.e. examining factors in isolation) to models that incorporate mediating factors. The compensatory view frames motivations as crucial mediators between psychological factors and negative outcomes, mediators that need to be taken into account in empirical work. Following on Shen and Williams (2011), motivations may be better predictors of negative outcomes as they capture the purpose for using an application which is influenced, but not uniquely determined, by psychological characteristics.

A validated framework for motivational factors in MMO games was constructed by Yee (2006, 2007) and has been used for research on excessive use (Caplan et al., 2009; Kuss et al., 2012). The framework measures a player's orientation to online gaming in relation to the three broad motivations of achievement, social interaction and immersion. The achievement motivation measures the desire to gain power, advance rapidly and accumulate in-game status or wealth. Social interaction measures the motivation to chat with others, form relationships with other players and

deriving a sense of community from the game. Immersion consists of role playing with other players, customising the appearance of one's character, knowing things about the game that most other players do not know about, and escapism, i.e. using the game to relax, escape from real life or avoid real life problems (Caplan et al., 2009). Yee's motivational framework will be used in this paper to explore the differences between psychological characteristics and motivations in predicting negative outcomes of MMO playing. It is hypothesized that psychological characteristics only have an indirect effect on negative outcomes and that this relationship can be explained by motivations acting as a mediating variable.

H2. The relationship between psychological characteristics and negative outcomes weakens when motivations for play are included in the model.

3. Method

To test the hypotheses and research question, this study used survey data from players of the MMO game World of Warcraft (WoW). WoW is a popular MMO with over 10 million subscribers (Blizzard Entertainment Inc., 2012) and represents the genre of fantasy role playing MMO's. This genre accounts for around 70% of all MMO subscriptions (White, 2013).

3.1. Sampling and procedure

An online survey was advertised on a large WoW fan-based forum, <http://mmo-champion.com>. After completing an informed consent procedure, players completed a 10–15 min survey. No incentives were given for participation. A total of 898 players participated in the survey which was available online for two months. After removing cases with missing values for the variables in the current study, the final sample size was $N = 702$. Participants ranged in age from 14 to 60.

3.2. Measures

Three psychological factors were chosen from previous studies on excessive internet use and assessed with validated instruments. Five-point likert scales were used throughout, with responses ranging from "Strongly Disagree" to "Strongly Agree". Social anxiety was measured with the four strongest loading items on the Social Interaction Anxiety Scale (SIAS) which assesses fear of general social interaction (Mattick & Clarke, 1998) ($M = 3.0$, SD = 1.0, $\alpha = .90$). Perceived stress was measured by four items from Cohen, Kamarck, & Mermelstein's (1983) Perceived Stress Scale ($M = 2.5$, SD = 0.7, $\alpha = .75$), with items focused on the perceived feeling of control over life events. Finally, loneliness was measured with five items from the UCLA Loneliness Scale (Russell, 1998) ($M = 2.5$, SD = 0.8, $\alpha = .85$). Two demographic variables, gender (89% male) and age ($M = 23.6$, SD = 6.7) were also included.

To measure excessive internet use, five negative outcomes were adapted for WoW from previous studies (e.g., Caplan, 2002, 2005; Griffiths, 2000; Meerkerk, 2007; Morahan-Martin & Schumacher, 2000; Smahel et al., 2012; Widyanto & McMurran, 2004; Young, 1998):

(1) I sometimes lose sleep because of the time I spend playing WoW.
(2) I sometimes skip meals or delay my eating because I am busy playing WoW.
(3) I have had conflicts with my partner or parents over the time I spend on WoW.
(4) I have lost contact with some friends because I rather spend time on WoW.

(5) My school/job performance has suffered because of the time I spend on WoW.

This scale had satisfactory internal reliability ($M = 2.6$, SD = 0.8, $\alpha = .72$) and will be referred to as the negative outcomes (NO) scale to reflect its content, where a higher score refers to more negative outcomes.

The final set of measures operationalized game-related motivations, drawing on Yee's inventory of MMO motivations (Yee, 2006, 2007). The present study included escapism, a sub-component of immersion, rather than the immersion component itself because escapism has the strongest association with excessive internet use (Caplan et al., 2009; Yee, 2007). The resultant motivations inventory consisted of seven items measuring achievement ($M = 3.6$, SD = 0.6, $\alpha = .71$), four items measuring social interaction ($M = 3.4$, SD = 0.7, $\alpha = .74$) and five items measuring escapism ($M = 3.0$, SD = 0.7, $\alpha = .73$). The alphas for the motivations were consistent with those reported in other studies using similar measurements (e.g., Caplan et al., 2009; Williams et al., 2008) and were considered satisfactory. To further ensure an accurate replication of Yee's (2007) framework, motivations were also checked via exploratory factor analysis. The replication was successful with the sixteen items clustered into the three factors as in Yee's study, with escapism rather than immersion as the third factor and all factor loadings >.30. The measures used for analysis were derived by computing the averages for each psychological factor, motivational factor, and the NO score.

4. Results

A correlation matrix for psychological characteristics and negative outcomes was produced to address H1 (Table 1).

All psychological characteristics were significantly related to negative outcomes when examined in isolation. Stress had the strongest correlation with negative outcomes, followed by loneliness.

RQ1 was addressed by a hierarchical multiple regression analysis with the NO scale as the dependent variable. Step 1 contained significantly correlated psychological characteristics and demographic variables (age, gender) as predictors. The results are presented in Table 2.

Table 2 shows that when demographic variables and other psychological characteristics are controlled for, social anxiety and loneliness no longer predict excessive use, with stress remaining the only significant psychological predictor. Gender also had a significant effect on NO scores while age did not. This model explained 14% of the variance in NO scores.

Proceeding to address the relationship between psychological characteristics, motivations and negative outcomes a second correlation matrix was produced (Table 3).

As Table 3 shows, all psychological characteristics and motivations were significantly related to negative outcomes when examined in isolation. The motivations escapism and achievement had

Table 1
Correlations for psychological characteristics and negative outcomes.

	Social anxiety	Loneliness	Stress
Social anxiety			
Loneliness	.518**		
Stress	.389**	.501**	
Negative outcomes	.218**	.244**	.302**

Base: $N = 702$.
* $p < 01$.
** $p < 001$.

Table 2
Multiple regression model on mean NO score for WoW players, using demographics and psychological characteristics as predictors.

Model	Variables	β	t	Model R^2
1				.14
	Age	−.013	−2.82	
	Sex (0F, 1 M)	.318	3.31[**]	
	Social anxiety	.059	1.77	
	Loneliness	.092	2.09	
	Stress	.254	5.45[**]	

Base: N = 702.
 [*] $p < 01$.
 [**] $p < 001$.

higher correlations with negative outcomes than any of the psychological characteristics.

To address H2, the variables significantly related to negative outcomes were used for step 2 of the hierarchical regression model together with demographic variables (Table 4).

Together all of the variables in model 2 explained 32% of variance in participants' NO scores. The addition of motivations in step 2 accounted for a significant increase of 18% in the explained variance in NO scores, indicating that this model fit the observed data better.

Escapism and achievement were significantly related to NO scores but social interaction was not. Upon entering motivations in the model all psychological characteristics lost significance. Gender still had a significant effect while age did not.

Escapism and achievement both had similar beta-values in model 2, but the psychological characteristics interacted differently with the two motivations. Social anxiety lost significance when escapism was controlled for but remained significant when achievement was controlled for. Loneliness and stress lost significance when either of the two motivations was controlled for.

5. Discussion

Being male appears to be a significant predictor of higher NO scores. However, due to the representativeness of the sample this result may not be generalisable to men and women in general, but perhaps to men and women who play MMO games. Age was not significantly related to NO scores which is curious, but perhaps indicative that sometimes skipping a meal or losing a bit of sleep when gaming may be increasingly common across the age groups.

Contrary to the findings of Caplan et al. (2009), achievement emerged as a positive and significant predictor of higher NO scores, a result also found by Yee (2007). This study used a measurement of achievement focused around the need for structural advancement, as recommended by Caplan et al. (2009), instead of competition or dominance, which would explain the different result. Escapism was a positive and significant predictor of higher NO scores which is consistent with prior research by Caplan et al. (2009), Kuss et al., (2012) and Yee (2007). This study found no relationship between social motivations for play and NO scores which

Table 4
Multiple regression model on mean NO scores for WoW players, using demographics, psychological characteristics and motivations as predictors.

Model	Variables	β	t	Model R^2
2				.32
	Age	−.005	−1.14	
	Sex (0F, 1 M)	.309	3.58[**]	R^2 change
	Social Anxiety	−.008	−.26	.18[**]
	Loneliness	.085	2.12	
	Stress	.107	2.44	
	Escapism	.373	8.38[**]	
	Achievement	.358	7.07[**]	
	Social interaction	−.029	−.761	

Base: N = 702.
 [*] $p < 01$.
 [**] $p < 001$.

is surprising considering the large body of literature suggesting that online social behaviour may be a strong predictor of excessive use. However, this result is supported by Caplan et al. (2009) and emphasizes their recommendation that future research on excessive use should compare users of hypothetically richer social environments (e.g. Facebook) with MMO players to examine possible differences in excessive use scores.

The primary purpose of this study was to problematize the conclusions drawn from studies associating psychological characteristics with excessive internet use, in the context of online gaming. In support of H1, the psychological characteristics in this study were all significantly related to negative outcomes of MMO playing when examined in isolation. However, when fitted in a regression controlling for multiple psychological characteristics in response to RQ1, only stress remained significant. This questions those studies that found loneliness and social anxiety to be significant predictors and, potentially, it questions all studies making claims about psychological characteristics as stable predictors of excessive internet use. The study of human behaviour is inevitably complex and no one can demand that we include all possible influencing variables. While variable selection is necessarily theory driven, this study has highlighted potential issues with measuring only a select set of psychological characteristics in each study.

The support for H2 indicates that the relationship between psychological characteristics and negative outcomes may be indirect and better explained by a third mediating variable; motivations for play. As Table 3 shows, higher levels of stress were associated with negative outcomes of play, but this was an indirect effect explained by the escapism motivation. This suggests that psychological characteristics may be more usefully explored as part of a chain of events rather than focal point, and that there are additional factors that may be informative and contribute to theory building. One limitation of this study was that it used a sample of self-selected WoW players and the results can therefore not be generalised to users of all internet platforms. It would be useful for future research to test these results across a variety of internet platforms and activities.

Table 3
Correlations for psychological characteristics, motivations and negative outcomes.

	Social anxiety	Loneliness	Stress	Achievement	Escapism	Social interaction
Achievement	.079	.027	.088			
Escapism	.389[**]	.328[**]	.454[**]	.325[**]		
Social interaction	.088	−.014	.128[**]	.384[**]	.323[**]	
Negative outcomes	.218[**]	.244[**]	.302[**]	.377[**]	.472[**]	.184[**]

Base: N = 702.
 [*] $p < 01$.
 [**] $p < 001$.

To conclude with a theory of compensatory internet use, using the framework of motivations and psychological characteristics given in this study, I suggest the following: problematic real life situations can motivate a user to go online and use certain applications to fulfil unmet needs or alleviate dysphoric moods. This can have positive and negative outcomes. Positive when the compensation is successful and makes the user feel better and negative when problematic outcomes occur; these are not mutually exclusive and may coincide. When the motivations to go online are grounded in unmet real life needs or certain psychological characteristics, the risk of negative outcomes may be higher due to the intensity of use and permanence that such compensation requires.

This view is helpful in dissemination because it places less emphasis on speculative accounts of how psychological characteristics may be related to excessive use and instead contextualizes the motivations behind excessive use in the presence of certain characteristics or life situations. Achievement was not associated with any psychological characteristic in this study but had a significant relationship with negative outcomes. Without knowing where the achievement motivation stems from conclusions about the impact of achievement on excessive use will be speculative as well. As an example from this study, it was surprising that neither social anxiety nor loneliness correlated with the social interaction motivation, which would have made sense given a compensatory view on MMO play. It may be that social interaction in MMO's does not adequately compensate for lack of social activities offline. Escapist behaviour may therefore better compensate for the negative feelings stemming from a lack of social interaction offline; social anxiety ($r = .389$) and loneliness ($r = .328$) were both significantly correlated with escapism. Firmly grounding each motivation in a set of psychological characteristics or a life situation would contribute to a more informed account of what a particular motivation may compensate for, which seems to be a fruitful venue for future research to explore.

The results for the social motivation have already been highlighted as lacking in this respect. What about achievement, does it indicate frustration over an absence of real life success, or low self-esteem? Escapism, does it indicate a stressful or unsatisfactory life situation? Building on a theory that takes both psychological characteristics and motivations for use into account when investigating excessive internet use would give further insight into the internet's compensatory nature. This would bring us closer to an understanding of why some people are motivated to spend so much time online that they suffer from negative outcomes, without necessarily labelling it a compulsion. Future research should explore whether the effect of other psychological characteristics not included in this study may also be indirect and clarified by mediating variables, starting with motivations for going online. At the same time, it is important to remember that a lot of people play to achieve or escape without suffering negative outcomes. The key question therefore seems to be when, or for whom, such motivations may be harmful.

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