Excessive internet use – fascination or compulsion?

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Declaration

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Abstract

Excessive internet use and its problematic outcomes is a growing focus of research, receiving attention from academics, journalists, health workers, policymakers and the public. However, surprisingly little has yet been accomplished in terms of understanding the causes and consequences of this phenomenon. I argue that this is due to the framing of excessive internet use as an addiction, which leads researchers to neglect people's reasons and motivations for excessive internet use. The perspective taken in this thesis is that excessive internet use may help people to cope with difficult life situations. This explains why people keep using the internet excessively despite problematic outcomes: the overall experience is positive because worse problems are alleviated. Based on the relationship between a person's well-being, which is the focal point of literature on excessive internet use, and the motivations for media use grounded in uses and gratifications research, this thesis proposes a combined framework to examine if excessive internet use may be explained as a coping strategy taken to excess. This question was asked in relation to three online activities: World of Warcraft; Facebook; and online poker. Each group was surveyed about their psychosocial well-being, motivations for internet use, and any problematic outcomes. Findings showed that interactions between motivations for use and psychosocial well-being were important explanatory factors for problematic outcomes. Respondents with low self-esteem or high stress experienced more problematic outcomes when gaming or gambling to escape negative feelings, while escapist use was less problematic for players with high self-esteem or low stress. This has implications for how society needs to respond to cases of excessive internet use, since such behaviour can be both helpful and harmful. Future studies may usefully move beyond theories of addiction and consider excessive internet use as a coping behaviour that has both positive and negative outcomes.

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Table of Contents

Appendices

Index of Tables

Index of Figures

Foreword

On the 8th of December 1989, I remember waking up unusually early and particularly excited. It was my fifth birthday and the custom in Sweden is that five-year-old children get a birthday present in the morning! Rather than waiting for my parents to wake up, I got out of bed and trotted upstairs to claim the present that had been kept out of my reach the night before. It was a brand new Nintendo, which at the time I knew nothing of as it had been launched on the Swedish market that same year, but it was my present and I was determined to play with it. My parents have recounted the story of how they came upstairs around 8 am and found me in front of the television, fully occupied with making some character jump on mushrooms and climb pipes. Breakfast was out of the question. Sleep? Hardly. I played all day, went to bed late and was up early the next day. Looking back, this makes perfect sense: why waste time sleeping when there was something so much more interesting I could do with my time? I doubt if my parents realized how much this present would impact the course of my life from that point onwards.

My Nintendo was followed by a Super Nintendo and then by a Nintendo 64. Eventually consoles were abandoned for computers which allowed me to play online with my friends, which was far more convenient than having people over all the time. If I was to try and estimate how much time I spent on gaming consoles or the internet during my childhood and teenage years, I would say five hours a day on a regular weekday and maybe ten hours or more a day at weekends. I played plenty of sports in my teenage years but one does not really have the energy to play football or tennis for more than a few hours a day, which left plenty of time for gaming.

As I grew up, gaming and spending time online became a way of life that I enjoyed and through which I spent time with my friends as our daily schedules and physical distances made it more difficult for us to meet in person. Through the internet I could have fun with my friends for a few hours every evening, regardless of where we lived. During the time I was studying Psychology at Stockholm University I attended a research class where we were asked to write a literature review on the subject of our choice. I had access to the PsycINFO database and was browsing through this in a leisurely manner, trying to find something interesting to write about, when by chance I came across an article by Kimberly Young entitled "Internet Addiction: The Emergence of a New Clinical Disorder". Because of my strong interest in gaming and the internet I was curious to see if there actually was such a thing as internet addiction and what researchers had to say about it. Reading through Young's article, I soon realized that very little of what she wrote matched my own experiences. While I certainly exhibited some of the behaviours she defined as pathological, to me these behaviours made sense given the circumstances. I was surprised by the tendency to pathologize behaviours that, in my experience, had understandable and reasonable explanations.

As argued by media scholar Rob Cover (2006), I believe there is a tendency within research on internet and gaming addiction to misread immersion and interaction as addiction, and that this is sometimes exaggerated by the media because scare stories make compelling headlines. Today, scare stories about the dangers of video games and internet use are a widespread phenomenon. I worry about children growing up today, not because they are exposed to the internet or to video games, but because their parents are exposed to research and media reports which misrepresent excessive internet use as inherently

dangerous or addictive. As my own story illustrates, some people might have understandable reasons for engaging in excessive internet use. This may at times lead to rather ridiculous behaviour that ultimately has some problematic outcomes but at the same time there may be considerable benefits.

Over the course of my PhD my perspective on problematic internet use has become considerably more nuanced. While initially I sought to challenge the idea that people could play so much that it actually had serious negative real life consequences, I have since encountered enough people who do so to change my mind. As I am completing this thesis I am still of the opinion that addiction might not be the best way to conceptualize problematic internet use, which I will also argue in this thesis, but I have become more aware that problematic internet use is a serious issue for some people. My intentions with this work is now focused more on understanding the causes behind problematic internet use and understanding why it persists, rather than arguing that it is never problematic at all. In a day and age when almost everyone uses the internet a lot and prefer this form of entertainment to more "traditional" activities there is a value in understanding what inspires such a high level of engagement by so many people, but at the same time it is important to acknowledge that the desire to go online might sometimes overshadow other needs which are then disregarded. This disregard, undoubtedly, is what causes such concern amongst parents, researchers and the public. In this thesis I will therefore try to understand people's motivations for repeated excessive internet use despite problematic outcomes and propose alternative ways to approach this issue through a framework outside that of addiction. The difference is that a focus on people's motivations frames the excessive user as a person with agency, able to make goal-oriented choices, and frames the excessive use as a behaviour

19

that can be at the same time both positive and problematic. This is different from framing excessive use as an addiction, which is by definition only problematic and removes agency from the user, who is portrayed as having lost control. As renowned addiction scholar John B. Davies (1992) puts it, people get involved in excessive behaviours because they like them, "not because they fall prey to some addictive illness which removes their capacity for voluntary behavior" (p. xi). I believe there are understandable processes underlying excessive internet use with problematic outcomes that have little to do with addiction. The exploration of these processes constitutes the focal point of this thesis.

1. Introduction

Do some people have problems with spending too much time online? Yes, and some people also spend too much time reading, watching television, and working and ignore family, friendships, and social activities. But are TV addiction, book addiction, and work addiction being suggested as legitimate mental disorders in the very same category as schizophrenia and depression? (Grohol, 1999, p. 400)

This thesis is a critique of the way in which research on the problematic outcomes of internet use is primarily conducted from a perspective of addiction, drawing on terminology, measurements and definitions from a medical paradigm. While people may indeed exhibit behaviours that are excessive and reminiscent of addiction with regard to internet use and gaming, this does not necessarily mean that they have lost control or suffer from a biologically based, progressive and terminal disease, which is one of many popular beliefs about addiction (Shaffer, 1986, p. 295).

Psychologist Howard Shaffer writes that addiction is a multifaceted and complex phenomenon (1986). It has been explored by professionals from a wide range of disciplines and within a variety of scientific paradigms (Shaffer, Hall & Vander Bilt, 2000), each proposing a different idea of what addiction is and how it should be dealt with. When applying the addiction label to excessive internet use researchers and clinicians[1] need to consider the conceptual confusion inherent in the study of addictions in order to avoid

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[1] A clinician in this thesis refers to health care practitioners working in treatment settings, such as a psychologist or a psychiatrist.

putting people at unnecessary risk by drawing unwarranted conclusions about the validity of this new construct (Shaffer et al., 2000). Explaining excessive use through an addiction framework only presents one side of the story and may also blind its proponents to the inadequacies of such explanations (Gambino & Shaffer, 1979).

This thesis will instead conceptualize excessive internet use as a coping behaviour, drawing on the work of psychologists Richard Lazarus and Susan Folkman (1984), who's widely cited studies on coping defines it as a behavioural response intended to deal with social, emotional and psychological issues. The proposal to conceive of excessive internet use as a coping behaviour draws partly on one of the most popular cognitive-behavioural theories of the addictive process, the stress-coping model, which suggests that addictive behaviours are a way for people to cope with life problems by reducing negative moods and increasing positive feelings (Shiffman & Wills, 1985; Wills & Shiffman, 1985; Wills & Hirky, 1996). At the same time, this thesis draws on classic media and communications research on the uses of the mass media (Katz & Foulkes, 1962), which suggests that one of the reasons for increased use of mass media is to seek relief from, or compensation for, inadequacies in an individual's life (p. 381) or to satisfy psychological needs (Katz, Gurevitch & Haas, 1973; Blumler & Katz, 1974). These needs are suggested to be met through particular affordances of the medium which can gratify them.

Crucially, Lazarus and Folkman (1984) note that if coping strategies are used to an extreme this can lead to problematic outcomes in life. I suggest here that these problematic outcomes are what researchers consider to be symptoms of an addiction. However, I argue that these problematic outcomes are indicative of other underlying problems rather than

constituting an addiction in their own right; this has been a point of debate in the internet addiction discourse from the very beginning (Shaffer et al., 2000). From this perspective I will argue throughout the thesis that, in the study of problematic outcomes of internet use, applying the label of addiction causes further conceptual and methodological complexity while bringing few advantages.

As I discuss in depth in the next chapter, conceptual issues have been a major problem in the study of addiction for decades (Shaffer, 1986; Shaffer, 1987; Marlatt et al., 1988; Shaffer & Robbins, 1995) and constitute one of the main confusions that follow when excessive use is conceptualized as an addiction. Such conceptual chaos is common in emerging scientific fields (Cohen, 1985; Shaffer, 1986; Shaffer, 1997) and can lead to a wide variety of terms being designated to describe the same phenomenon (Shaffer, 1997). Widyanto and Griffiths (2006) have noted that for the phenomenon commonly referred to as internet addiction a number of terms, such as pathological internet use, compulsive internet use, excessive internet use, problematic internet use, internet use disorder and internet addiction, are used interchangeably to describe more or less the same thing. While this thesis will not engage at length in the semantic debate, it is important here to define how I use some of these terms as I believe they each reflect important nuances that should not be overlooked. One basic premise is that excessive internet use is not only problematic, but can also have positive outcomes.[2] While the term excessive may imply that something is being done too much and that adverse consequences follow, I adopt Larkin and Griffiths' stance (1998) that, for some individuals in some contexts, it makes sense to use excessively because the positive

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[2] Note that this is different from Glasser's (1976) notion of positive addiction, as his concept is conceptualized as an addiction, but one that has only positive rather than negative outcomes.

outcomes outweigh the negative. As Griffiths (2010) stated based on case study evidence of online gamers, some players may be excessive users but not all excessive users experience problematic outcomes. This perspective fits neatly with both Lazarus and Folkman's (1984, p. 134) and Katz and Foulkes's (1962, p. 387)[3] view that coping behaviours can have both positive and problematic outcomes, and allows me to move beyond the interpretation of excessive use as an addiction or even a disease -- two theories that I discuss further in the next chapter. Therefore, I use the term excessive use to denote intense engagement, but without making a judgment as to whether or not the excessive use is problematic. In the empirical chapters I discuss specifically the "problematic outcomes" that may be a consequence of excessive use, or rather a consequence of the underlying processes that lead to excessive use.

The main purpose of this thesis is to examine whether an individual's problematic outcomes of internet use may be characterized as a consequence of a coping behaviour intended to deal with life problems. I propose to do this by looking at how the relationship between motivations for internet use and problematic outcomes of internet use changes depending on the well-being of the person concerned. My hypothesis is that excessive internet use is motivated by a need to cope with low well-being and that certain uses of particular platforms can accommodate this coping need. This can lead to problematic outcomes due to the time and focus required for such coping behaviours. Furthermore, Folkman and Lazarus (1988) have argued that coping behaviour is a mediator of emotional states that changes the original relationship between the antecedent and the outcome (p. 311). Therefore, one step

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[3] Katz and Foulkes (1962) do not mention explicitly coping behaviours as defined by Lazarus and Folkman (1984), but rather discuss how escapist mass-media use serves as a coping strategy.

in identifying whether excessive internet use may be characterized as a coping behaviour involves examining whether the motivations for internet use mediate effects of an individual's well-being on the problematic outcomes, as well as examining the respective direct and indirect effects in order to bring further understanding to how these processes are related.

Crucial to this thesis is the fact that I contest the conventional use of the terms compulsive and addictive to describe excessive internet use, because these terms have strong biological and medical roots which have been called into question by a vast array of evidence (Peele, 1985; Shaffer, 1986), some of which I will present in the next chapter. However, throughout this thesis I will use the term internet addiction when speaking about the body of research accumulated so far, since scholars in this area have mostly focused on theories of addiction in their explanations of the problematic outcomes that sometimes follow from excessive use (Shaffer et al., 2000). I argue, however, that this is a matter of framing rather than a valid label for the phenomenon. In other words, scholars have framed the phenomenon of excessive internet use as an addiction and studied its problematic outcomes from this perspective, but I suggest that we may more usefully frame these problematic outcomes as a consequence of an internet-based coping behaviour. In doing so, we may also draw on explanations from other paradigms in addition to the medical and psychological. This effectively opens up for the inquiry I am interested in, the question of *why* people are repeatedly motivated to use the internet excessively despite experiencing problematic outcomes, which a medical perspective on addiction does not easily accommodate because it fails to consider how factors like individual agency, life context and societal change interact to shape our behaviours (Peele, 1985).

This thesis acknowledges the contested state of internet addiction research (Shaffer et al., 2000; Byun et al., 2009). It partly recognizes the addiction perspective, which frames excessive internet use as potentially problematic, and agrees that issues with an individual's well-being are a significant causal factor in problematic outcomes for internet use. As a complement to the addiction perspective, this thesis proposes to incorporate a uses and gratifications framework into the study of problematic outcomes of internet use. This perspective emphasizes the importance of individual agency and considers media use as a conscious choice driven by needs and motivations (Katz, Gurevitch & Haas, 1973; Blumler & Katz, 1974). While an addiction perspective features what Davies (1992) has critiqued as an unfair characterization of the addict as a "helpless victim", who is overpowered by a desire to use, a uses and gratifications perspective sees the media user as an active participant who makes informed media choices (Katz, Gurevich & Haas, 1973). These choices are made with respect to cultural factors and expectations of the gratifications that media may fulfil, which influence how and why we use different media sources (Ruggiero, 2000).

It is clear that our perspective on internet use matters: whether we view excessive internet users as helpless victims or as individuals making informed choices determines how we engage with them on a personal and societal level. Crucially, it also determines how we engage with the problematic outcomes that may result from such behaviours. However, the way in which society views people who engage in excessive or problematic behaviour is largely influenced by the medical profession and its manuals, such as the Diagnostic and Statistical Manual of Mental Disorders (DSM) published by the American Psychiatric Association (APA) (Conrad & Schneider, 1992; Conrad, 2007). The DSM can be seen as a

repository of medicalized[4] categories which provides a common language for clinicians, a tool for researchers, and a bridge across the clinical/research interface (APA, 2000). It also contains a coding system for statistical, insurance and administrative purposes (Frances & Widiger, 2012). It offers guidelines for medical professionals that assist in the identification of mental disorders. Inclusion in the DSM is how most psychiatric disorders gain legitimacy (Conrad, 2007) and it has great impact on research, funding and treatment as well as civil and forensic decisions (Frances & Widiger, 2012).

However, a manual that contributes to such a broad range of activities inevitably encounter some problems; the criteria proposed in DSM are too detailed to be convenient to clinicians, not quite detailed enough for researchers, too dull for teachers and students and not precise enough for lawyers (Frances & Widiger, 2012, p. 110). Furthermore, in critique of the DSM a number of authors have noted that psychiatric diagnoses are not necessarily indicators of objective conditions, but rather products of a negotiated process influenced by socio-political factors (Conrad, 2007; Kirk & Kutchins, 1992; Kutchins & Kirk, 1997). Indeed, Frances and Widiger (2012), authors of the DSM-4, noted that conditions become mental disorders more by practical necessity rather than meeting certain criteria (p. 111). Similarly, Kutchins and Kirk (1997) have argued that, despite its claims to psychiatric authority, the DSM is not a scientific document, but "a mix of social values, political compromise, scientific evidence and material for insurance forms" (p. 11), which is used to sanction and expand psychiatric categories. Indeed, the DSM struggles with its elusive definition of what a mental disorder is,

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[4] Medicalization is when a problem is defined in medical terms, described using medical language, understood through the adoption of a medical framework, or "treated" with a medical intervention. This can be a functional process leading to advances in medicine and diagnostics, or lead to stigmatization and moral judgment of behaviours that are largely unproblematic (Conrad, 2007, p. 5).

an unclear epistemology, and a risk of falling for contemporary fads leading to diagnostic expansion and treatment of behaviours that may be unproblematic (Conrad, 2007; Frances & Widiger, 2012).

One example of the risks of diagnostic expansion is the case of attention deficit hyperactivity disorder (ADHD) in children, which emerged as a diagnostic category in the 1950s and led to the widespread use of stimulant medications such as Ritalin as treatment (Conrad, 1975). The most significant criterion for ADHD was a child's behaviour at school, with hyperactive and disruptive behaviours emphasized as important in identification (Conrad, 1976). It was noted by the APA that the behaviour usually diminished in adolescence (1968). However, in the late 1970s cohort studies that had followed children with ADHD into adulthood found that the symptoms persisted for some individuals, which established the notion of adult hyperactives and later the diagnosis of attention deficit disorder (ADD),[5] found only among adults whose ADHD persisted from childhood (Conrad, 2007).

Public awareness around adult ADHD greatly increased in 1987, when Frank Wolkenberg, a freelance photographer, published a first-person account in the *New York Times Magazine* of his discovery, after some success in adult life, that he had ADHD (Conrad, 2007). Wolkenberg (1987) had been diagnosed with ADHD by a psychiatrist when he sought treatment for depression and suicidal thoughts. He then reinterpreted clues in his early life, such as impulsivity and being easily distracted and disorganized, as signs of the disorder. Furthermore, he attributed "seemingly inexplicable failures […] all unnecessary and many

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[5] Later renamed ADHD in DSM-3-TR (APA, 1987).

inexcusable" (p. 62) to ADHD and suggested that it was a neurobiological dysfunction of genetic origin, allowing him to attribute his life problems to a chemical imbalance. As public awareness grew, psychiatry focused increased attention on this new problem. Clinics for adults with ADHD were established and the number of published journal articles increased tenfold, according to some databases (Conrad, 2007). At the same time, major US news shows reported that as many as 10 million adult Americans might have ADHD (Vatz & Weinberg, 1997) and established the notion that any current or previous behavioural problems could be attributed to this mental disorder. Shaffer (1994) noted how adult ADHD became the self-diagnosed condition most often seen in his practice: "I fear that the condition allows a patient to find a biological cause, that is not always reasonable, for job failure, divorce, poor motivation, lack of success, and chronic depression" (p. 638). Some critics argued that the diagnosis was becoming too prevalent and that, although some people diagnosed with ADHD might be neurologically impaired and in need of medication, the disorder was being blamed for all sorts of problems that had nothing to do with ADHD (Bromfield, 1996).

As sociologist Peter Conrad (2007) has written in his work on deviance, behaviours that used to be judged morally (e.g., short attention span in children) were increasingly being transformed into objective clinical diagnoses (like ADHD). This illustrates one of the risks with medicalizing excessive internet use, because once it is included in manuals like DSM-5 (APA, 2013) as a valid diagnosis, the diagnosis gains a power of its own. Once a diagnosis is legitimized by the DSM it becomes accepted by the medical community and thus shapes the way society comes to view certain behaviours. This happened with ADHD and may yet happen with excessive internet use, which will have implications for several groups of

people: internet users, their families, researchers, clinicians and policymakers. As Jacobs et al., (2013) have stated, the younger generation of psychiatrists consider the DSM an authoritative text and critiques of it are rarely discussed in clinical practice. Categories intended to be used only in specialist settings inevitably spread also to other community contexts (Jacobs et al., 2013), as exemplified by the case of self-diagnosed adult ADHD. Since the DSM holds such a powerful position, it is paramount that the diagnoses eventually included in the DSM have a proper evidence base that has been subjected to rigorous critique and examination (Shaffer et al., 2000).

Unfortunately, as reflected by the changes made to the category of addictions in the recently published DSM-5 (APA, 2013), diagnostic expansion continues to be an issue. Frances and Widiger (2012) have critiqued DSM-5 severely for expanding the boundaries of psychiatry and causing diagnostic inflation. This, they claim, distracts attention from the core mission of treating the more severely ill. They warn that if criteria for addiction are expanded to also encompass things like sex addiction, porn addiction and internet addiction, there will be an over-diagnosis of such disorders, allowing private actors to profit from these diagnoses by offering interventions with no evidence base (Frances & Widiger, 2012; Conrad & Schneider, 1992). As I discuss in a letter to the editor of *Addiction (*Kardefelt-Winther, 2014e), the new diagnosis for internet gaming disorder included in the DSM-5 research appendix is an example of the hazards of diagnostic expansion. The criteria are based directly on existing diagnoses for gambling and substance use disorder (Petry et al., 2014)[6] and thus merely reflect preconceptions of what an addiction to online gaming could look

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[6] Gambling disorder is the DSM-5 category for what was known in DSM-4 as pathological gambling. Substance use disorder, similarly, is a new DSM-5 category which combines the categories of substance abuse and substance dependence from DSM-4.

like, rather than representing a unique and valid construct. Crucial here is the fact that our contemporary understanding of gambling disorder developed relatively recently and as yet lacks a clear definition (Shaffer, Hall & Vander Bilt, 1997). This should serve as a warning that much remains unknown about the overlap between gambling disorder and other disorders (Shaffer et al., 2000). Since the field of gambling studies has not sufficiently established that gambling disorder represents a unique disorder, it may have been premature to base criteria for internet addiction on this diagnosis (Shaffer et al., 2000, p. 164) and it may be premature to use it as a theoretical basis for internet gaming disorder in DSM-5.

Equally problematic for the DSM-5 diagnosis for internet gaming disorder is the lack of consideration for individuals' life contexts (Kardefelt-Winther, 2014d, 2014e). Griffiths (2010) has emphasized the importance of life context in the study of excessive gaming in particular, since some people spend a great deal of time playing simply because this is the most rewarding activity available to them. This reflects one aspect of the problem with approaching the phenomenon of excessive internet use from a perspective of addiction, as it does not accommodate a view of the user as making informed choices based on their own needs and motivations. The criteria for internet gaming disorder in DSM-5 ignore the features of gaming that make it an enjoyable, interactive, immersive and social hobby that many people wish to spend a lot of time on. The inclusion of internet gaming disorder in DSM-5 may be an example of where clinicians risk inadvertently doing harm because they have failed to establish empirically supported criteria for a problem with little construct validity (Shaffer et al., 2000).[7] The risk is that clinicians may diagnose a large group of people

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[7] Construct validity is the degree to which a test measures what it claims, or purports, to be measuring (Cronbach & Meehl, 1955).

with a mental disorder even though these individuals may just be fascinated hobby users, or -- in cases of actual problematic use -- they may employ treatments that over- or under-medicate (Shaffer et al., 2000). Such outcomes could have severe consequences for individuals' well-being and do more harm than good, which counteracts the basic principles of the DSM and the aims of the medical community (Shaffer et al., 2000). Neglecting the argument that people may have good reasons for excessive internet use has been a trend in research on internet addiction for over a decade. Instead, the focus has been on identifying psychological antecedents for disordered behaviour. Ultimately, such an approach may not adequately explain why people persist in excessive internet use despite problematic outcomes (e.g., Young & de Abreu, 2011). This highlights why a uses and gratifications perspective can usefully be combined with an addiction perspective, since it frames the user as making conscious media choices rather than being controlled by the media (Katz et al., 1973). This allows for an examination of excessive internet use as a coping behaviour with potentially problematic outcomes.

Problematically, an addiction perspective on excessive internet use suggests that people are at risk when they use the internet a great deal, even though no evidence of actual harm is present. As Chas Critcher has written (Drotner & Livingstone, 2008), concerns about the risks of new technology go as far back as the early 1900s. First there were concerns about public cinema and then about comic books, prohibited in 1930 on the grounds that they supposedly made young people criminal and promiscuous. Concerns escalated with the introduction in 1950 of television, which was blamed for being addictive and isolating, and in 1970 of computer games, which were accused of making people both addicted and aggressive. It is not surprising to see the same pattern repeated with the internet, but this

should make us question the legitimacy of these concerns. Confusion abounds when, at the same time, scholars from a variety of disciplines report many reasons why people are increasingly motivated to spend more of their spare time on the internet. To give a few examples amongst many, the internet has social and interactive features (e.g., boyd, 2014; Cole & Griffiths, 2007; Hussain & Griffiths, 2009), opens up new opportunities for performance, creativity and expression (Lowood, 2007) and has become an everyday practice in the home for purposes of social interaction and relaxation (Enevold, 2012). All of these factors motivate increased amounts of internet use, perhaps even excessive use, but for good reason.

Because of this confusion, it is all the more important to consider alternative explanations for excessive internet use that take as a starting point not only an addiction perspective, but rather consider multiple perspectives that may together explain why such behaviours occur (Griffiths, 2005). A broader theoretical base affords a perspective of excessive internet use which also takes account of individual agency, life context and societal change; this could help to indicate whether or not the behaviour is truly problematic. To exemplify why context matters, for a person voluntarily attending a clinic to receive help because they feel they spend too much time online, a clinical assessment test may be appropriate and well-founded recommendations for treatment are important; this is when a clinical context is called for. When a parent wants to know why their child spends so much time online and whether or not this is indicative of a problem, our perspective needs to be a different one. As Jacobs et al., (2013) have stated, the interpretation of problematic behaviours in specialist settings must not be conflated with similar behaviours in community settings. Today, findings and recommendations that belong in a clinical setting are often used as a response to public

concerns, which makes it difficult for policymakers, governments, parents and teachers to make informed decisions.

It is important to emphasize that the concepts of addiction and internet addiction can be criticized from within the medical paradigm on grounds of questionable validity. Spitzer (2001), the principal architect of DSM-3 (1980) and DSM-4 (1994), has stated that a diagnostic concept has validity to the extent that the symptoms of the disorder provide useful information not contained in the definition. That is to say, the definition must not be purely symptomatic, but also contain information about etiology, risk factors, prognosis and course of illness. This is the chief problem for research on internet addiction conducted from a medical standpoint because the symptoms also constitute the definition. This has created a form of self-validation of both theory and measurement: whenever symptoms of internet addiction are found in the population researchers argue that, on the one hand, their theory must be correct because they find examples of such behaviour in the population, while, on the other hand, their measurements must also be correct because these adequately capture behaviour that corresponds to the theory. In fact, theory and measurement are the same and thus one cannot validate the other.

Questionable validity is a common problem for many psychiatric diagnoses in the DSM (Kraemer, 2007), even for diagnoses like schizophrenia that have been around for a long time (Kendell & Jablensky, 2003). This does not mean that such diagnoses are not useful, only that they are not valid as unique diagnostic concepts.[8] Validation hinges on whether

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[8] A unique diagnostic concept is a mental disorder that can be successfully delineated as different from other disorders on the basis of its definition and/or diagnostic criteria (see Kendell & Jablensky, 2003).

one disorder can reliably be distinguished from another, which Kendell and Jablensky (2003) refer to as a disorder having demonstrable "natural boundaries". This means that demonstrable differences must exist between the defining characteristics of a disorder and those of other conditions with similar symptoms (p. 6). This is not the case for internet gaming disorder in DSM-5, for example, even though the symptoms are identical to those for gambling and substance use disorder (Kardefelt-Winther, 2014d, 2014e; Petry et al., 2014). Until we can reliably distinguish the key features of internet gaming disorder, there is no justification from a medical perspective for claiming that this diagnosis is valid, which makes its inclusion in the DSM-5 research appendix questionable (Kardefelt-Winther, 2014d). Even though the research appendix indicates that the disorder is in need of more research before full inclusion can be considered, it sends a message to the medical community, to researchers and to society that gaming is a growing problem despite the lack of evidence for this.

The concept of internet addiction has also been engaged with from a media and communications perspective, where it is sometimes argued that this is a case of social construction[9] or a result of moral judgments. Lin (2013) has discussed extensively how the discourse on video games in China is dominated by contradictory notions of pathology and productivity. She argues that excessive engagement with games is framed as a mental illness as long as it is not productive; her work shows how the media representation of online gamers as addicted changes once the gaming turns into a profitable career. As Szablewicz (2010) writes on the same topic, the line between mental illness and a productive career (or,

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[9] Social constructivism is the proposition that reality and knowledge are relative and depend on our specific social contexts (Berger & Luckmann, 1991, p. 14; see Berger & Luckmann also for a more detailed description).

in her dichotomy, between addict and athlete) appears to be contingent on whether the particular game played is potentially profitable enough to make a living from. If the game has such potential, excessive gaming is reframed as a necessary practice and a form of career development, rather than as an addiction; problematic outcomes are no longer indicators of a mental disorder, but an unfortunate side-effect of an individual's hard work. This connects with Griffiths and Larkin's (2004) argument that only when there is social disapproval of the risk attached -- in a neo-liberal society this is the risk of wasting time on something unproductive -- will activities be viewed as addictions rather than habits. This suggests that addiction may be considered a socially constructed phenomenon that reflects society's moral values, rather than a true mental disorder (Shaffer, 1986).

Despite the tensions between medical and media approaches to addiction outlined above, it is still possible to work at the intersection of the two without explicitly rejecting one or the other. While media research often takes an interdisciplinary approach, there are also some justifications in the medical literature for why combining different perspectives may be an appropriate way forward when dealing with concepts of questionable validity. Kendell and Jablensky (2003) argue that, if a diagnostic concept has not been shown to have demonstrable boundaries (and thus has poor validity), there may be excellent reasons for considering a less restrictive view that goes beyond existing definitions. This encourages an inquiry that shifts the focus from pre-existing accounts of symptoms and mental illness onto questions about what underlies the symptoms and where alternative explanations for problematic behaviours may be sought outside the existing paradigm. In other words, if one does not approach excessive internet use as an addiction, which is plausible given the lack of validity to the concept of internet addiction (Shaffer et al., 2000), then alternative

explanations for excessive internet use may fruitfully be sought outside a medical paradigm. That is not to say that excessive internet use is unproblematic and entirely socially constructed, merely that the definition of excessive use as an addiction may not be the most appropriate when applied to internet use because of its additional conceptual and methodological complexity. These thoughts are in line with Davies's (1992) claim that approaching the phenomenon of "intense use" from a medical perspective of addiction can be more harmful than helpful because it situates the researcher within a narrow frame of thought where only certain results and conclusions are possible. This tension needs to be reflected in our research practices in a way that allows us to move forward without necessarily reaching full consensus between perspectives on addiction, which may ultimately be impossible. However, this thesis will attempt to accommodate to some extent several perspectives. It accommodates an addiction perspective by recognizing the claim that excessive internet use may have harmful outcomes that are ultimately grounded in issues of an individual's psychological well-being. It also accommodates a uses and gratifications perspective by not taking for granted that excessive internet use is a valid mental disorder, but rather explaining its problematic outcomes as a result of attempts to cope with psychosocial issues through internet use. This perspective could help explain why some individuals continue to use the internet excessively despite experiencing problematic outcomes: perhaps they find this worthwhile in the end because worse problems are thereby alleviated?

2. A Historical View of Addiction Research

Tracing the development of the literature on internet addiction is facilitated by a review of the history of addiction research. Through understanding the addiction framework and its contested development and many debates, it will be easier to grasp how ideas that were initially applied to illicit substance abuse (Shaffer & Burglass, 1981) later came to be applied to activities as diverse as sex (Carter & Ruiz, 1996; Shaffer, 1994), exercise (Crossman, Jamieson & Henderson, 1987), eating chocolate (Macdiarmid & Heterington, 1995) or carrots (Cerny & Cerny, 1992) and, finally, internet use (Young, 1996).

Shaffer (1986) introduces a historical overview of the field of addiction by acknowledging that the multiplicity of phenomena collectively known as addictive behaviours have a long and rich social history, but that the study of such behaviours is much more recent (p. 285). Professionals from a broad range of disciplines have contributed to the development of the field of addiction study, and there are now a variety of models and paradigms for understanding and treating addictive behaviours (Loughead & Young, 1991). Indeed, Shaffer (1986) notes that the field of addiction study has roots in disciplines that include medicine, psychology, physiology, sociology, social work, biology, chemistry, politics and (!) witchcraft (p. 286). Unsurprisingly, this has led to disagreements about the underlying causes of addiction. Pharmacologists view addictions as a set of problems caused by drugs and neurochemical reactions (Davies, 1992). Psychologists and psychiatrists tend to approach addiction as a problem of learning behaviour, a compulsion,[10] a mental disorder or a disease.

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[10] "Compulsion denotes coercion from a discomfort that has to be allayed, whereas addiction more implies attraction towards something" (Marks, 1990, p. 1391).

Physiologists see addiction as a metabolic or organic problem and sociologists see addiction in terms of processes of social regulation, peer pressure and environmental forces (Shaffer, 1986).

2.1 Addiction from a Medical Perspective

There have been attempts at establishing consensual definitions of addiction and these are typically tied to a certain paradigm. For example, within the medical paradigm early definitions, such as the one found in *Dorland's Illustrated Medical Dictionary* (Dorland, 1974), defined addiction as "the state of being given up to some habit, especially strong dependence on a drug". Four criteria were listed as characterizing an addictive state:

(1) an overwhelming desire or need (compulsion) to continue use of the drug and to obtain it by any means; (2) a tendency to increase the dosage; (3) a psychological and usually a physical dependence on its effects; (4) a detrimental effect on the individual and on society".

These four criteria correspond to the notions of craving (1), tolerance (2), withdrawal (3) and adverse consequences for the user (4), and tend to be cited as core criteria of addiction (Peele, 1985). Other criteria that are often cited from a medical perspective as primary components of addiction are loss of control and relapse into the behaviour despite the adverse consequences (Brown, 1993; Shaffer, 2000; Shaffer & Albanese, 2004). This constitutes the conventional view, from the dominant medical paradigm, of addiction as a mental disorder (Shaffer, 1986). However, it needs to be repeated that these criteria reflect one view of addiction and that no consensual definition exists as yet (Shaffer, 2013). The absence of a consensual definition is problematic, making it difficult for researchers across disciplines to determine prevalence rates, etiology or the causes behind successful recovery.

Until a consensual definition is established, clinicians will keep encountering difficulties in diagnosis and treatment (Marlatt et al., 1988; Shaffer, 1987; Shaffer & Robbins, 1995), while social policy-makers will find it difficult to formulate regulatory legislation, determine treatment needs or establish healthcare systems and guidelines for healthcare reimbursement (Shaffer, 2013).

2.2 Addiction and Social Control

In addition to the medical definition of addiction presented above, it has also been argued that notions of addiction emerge as a form of social control (Shaffer, 1986; Conrad & Schneider, 1992). Shaffer (1986) claims that religious and secular rules, laws, sanctions and policies have served to define certain substances as acceptable or unacceptable, and certain forms or patterns of ingestion as proper use or abuse (p. 286): "Contemporary society, scientifically informed and religiously pluralistic, continues this tradition of regulating ingestible substances, though now less explicitly in the name of religion as in earlier times and more so in the cause of public health and safety" (p. 287). Peele (1985) writes that conceptions of the nature of drug use in the United States and the United Kingdom changed irrevocably in the early twentieth century after an energetic campaign undertaken by the US Federal Bureau of Narcotics together with organized medicine and the media (p. 3). In particular, this campaign eradicated awareness that people could use drugs moderately as part of a normal lifestyle. He writes that media and drug commentators in the United States seemed to feel obligated to conceal the existence of controlled heroin users and to maintain the conventional view that drugs were bad and that their ingestion needed to be policed and controlled.

2.3 The Addictive Disease Model

In the United States, the addictive disease model is the contemporary construction with the greatest number of adherents (Shaffer & Robins, 1991; Brown, 1993). This model uses bio-medical language to frame how we think about addiction and defines it as a primary, progressive and ultimately terminal illness which, if left untreated, will lead to premature death (Shaffer & Robins, 1991, p. 390). Shaffer and Robins (1991) report that some disease model practitioners accept this model as a "truth" and an "objective reality", while others recognize that the addictive disease model is more of a convenient guide that reduces a large amount of clinical material to something more manageable. Brown (1993) writes that the addictive disease model gained acceptance largely through the efforts of Alcoholics Anonymous and of Jellineck (1960), who first formulated the disease concept of alcoholism. During the late 1930s, when the ideology of Alcoholics Anonymous was being formed, problem drinking was usually viewed from the perspective of a moral model whereby the alcoholic was responsible for all his drinking and therefore also responsible for the misery it caused around him. The medical profession had little to do with alcoholics and attempts to help them had seen little success (Brown, 1993). Brown's argument was that religious beliefs no longer had the power to keep people from drinking and that a new secular model which restored credibility and respectability to the drinker was needed (p. 254). It was through the efforts of Alcoholics Anonymous that the idea of "loss of control" came to be regarded as a core symptom of addiction. The reclassification of addiction as a disease rather than a moral issue absolved the drinker from responsibility for the past and allowed for a restoration of status in the community (Heather & Robertson, 1989). Loss of control became an explanation for the drinker's behaviour, as attributed to the disease of addiction, and this was eventually widely accepted by the medical profession as a valid diagnosis.

Shaffer (1986) argues that the field of addiction entered a crisis in the 1980s as research findings that challenged the conventional perspective of addiction as a disease could no longer be ignored (p. 290). For example, Davies (1962) and Sobell and Sobell (1973, 1976) presented research that challenged the claim that the only treatment outcome possible for alcoholics was total abstinence -- a treatment model spearheaded by Alcoholics Anonymous. Davies (1962), in his now famous study, showed that some of the male alcoholics treated for alcohol-related problems had afterwards returned to a pattern of normal drinking, the crucial point being that if alcoholism was a "primary, progressive and terminal disease" (Peters, 1984, p. 167), then it should not be possible for a person with the disease to return to normal drinking patterns (Shaffer & Robins, 1991). Indeed, Shaffer (1985) and Vaillant (1983) later showed through reviews of the literature that between five and 15 percent of all problem drinkers drank again after adopting a course of abstinence, without returning to problematic drinking patterns. Brown (1993) claims that, with a credible alternative goal, the "out of control" drinker can always change his behaviour (p. 254), which is a claim backed by empirical evidence (e.g., Mello & Mendelson, 1965; Mello, McNamee & Mendelson, 1968; Cohen, Lebison, Faillace & Speers, 1971). Despite these findings, most followers of the addictive disease model have not renounced it, but rather tend to endorse it more energetically, doubting the researchers who reported these findings or doubting the accuracy of the original diagnosis of alcoholism for the patients studied (Shaffer, 1986, p. 293). This is also true of the argument that controlled drug use is possible, where follow-up studies of Vietnam War veterans provide compelling evidence that heroin can be used in moderation without leading to addiction (Robins, Davis & Goodwin, 1974; Robins, Heltzer & Davis, 1975; Robins, Heltzer, Hesselbrock & Wish, 1979). However, despite the significant challenges from more than three decades ago to the addictive disease model, it still has

plenty of support (Shaffer & Albanese, 2004). Shaffer and Albanese (2004) write that even today treatment providers and programmes commonly mistake drug users as being dependent on drugs and abusing them, irrespective of whether or not they experience harmful outcomes. It is not uncommon for such over-diagnosis to result in unnecessary hospitalizations, increased medical costs and patients who learn to distrust health care providers (p. 7).

2.4 The Importance of Multiple Perspectives in the Study of Addictions

Shaffer and Kidman (2003) argue that the risk for every medical professional is that they will view addiction only from their own perspective, which, like scientific paradigms in general, focuses attention towards certain attributes while blinding them to other important characteristics that can improve prevention or treatment. Conrad (2007) has stated that "what constitutes a real medical problem may be largely in the eyes of the beholder or in the realm of those who have the authority to define a problem as medical" (p. 4). Perhaps because clinical observers often find what they are looking for and do not see what they are not looking for (Shaffer, 1986), individuals working in the field rarely share a unitary set of rules or standards for diagnostics and treatment (Shaffer & Albanese, 2004). For example, a clinician adhering to a biological paradigm may view gambling disorder as a neurochemical problem and treat it with medication. While this may be a valid and functional approach for some, it is important for clinicians not to disregard other factors, like stress, that may predispose a person to relapse and engage in further gambling, since these may warrant additional treatment approaches focusing on psychosocial interventions (Shaffer & Kidman, 2003). Shaffer and Robbins (1991) have illustrated how the formulation of a patient's problems changes depending on the paradigm of the clinician, and reveals as much about

the medical professional as it does about the patient. In other words, clinicians create a narrative about their patients depending on a complex transaction between personal, cultural and professional ideologies (Shaffer & Kidman, 2003, p. 4), which has consequences for the interpretation of problems and their subsequent treatment.

However, each paradigm adds important information to our understanding of addictive behaviours and several paradigms should ideally be considered together (Shaffer & Kidman, 2003; Griffiths, 1996). Griffiths (2005) argues that addiction is such a multifaceted behaviour that it cannot be encompassed by any single theoretical perspective. As an example, Peele (1977) challenges the term addiction because of its strong biological and medical focus and suggests that it needs to be redefined so that it may be dealt with in a much broader, more measurable and socially relevant manner. While he agrees that the medical identification of addiction may usefully draw on signs such as craving, tolerance and withdrawal, he claims that the inadequacy of the addiction concept lies in its inability to identify causal processes (p. 1). Shaffer et al. (2000) note that, while standard definitions for diagnosing mental disorders such as those provided by DSM-3 (APA, 1980) and DSM-4 (APA, 1994) have provided increased diagnostic reliability, this has come at the expense of validity (e.g., Vaillant, 1983). In other words, while a medical perspective based on DSM criteria may be useful for the reliable identification of addiction, its standardized criteria and biological rooting may be inadequate when it comes to discovering the underlying causes. Instead, Griffiths argues (2005), both research and clinical interventions may be better served by a perspective that incorporates the best strands of contemporary psychology, biology, sociology and (as I argue) media and communications research.

2.5 Addiction and Coping Behaviour

Coping is an important concept in psychology that has been a focus of researchers for some decades (Lazarus & Folkman, 1984). Like the concept of addiction, coping has also received plenty of attention from lay people and has a colloquial meaning as well as a scientific one (Lazarus & Folkman, 1984). This thesis will not delve in great detail into the vast literature on coping, but since excessive internet use is posited as a coping strategy for low well-being it is important to briefly review the basic theories and also to connect these to the research on excessive internet use and addiction.

It needs to be said that there a confusion in the theory, research and understanding of coping (Lazarus & Folkman, 1984). Traditionally, studies of coping behaviour have been conducted in terms of two main paradigms: one derived from the tradition of animal experimentation and the other from psychoanalytic ego psychology. Miller (1980), a proponent of the animal model, argues that coping consists of learned behavioural responses that successfully lower arousal by neutralizing a dangerous condition. In contrast, the psychoanalytic ego model defines coping as realistic and flexible thoughts and acts that solve problems and thereby reduce stress (Lazarus & Folkman, 1984; Folkman, 1997). This thesis will draw on the second model, while recognizing that internet use does not necessarily solve problems, but rather helps the user to avoid them, or to avoid the negative feelings they cause. In the coping literature this is referred to as avoidance-coping (Folkman & Lazarus, 1991) and is generally seen as an effective way of dealing with short-term, uncontrollable stressors, but ineffective and possibly maladaptive for managing more enduring stressors. This is because the coping process is assumed to continue until the stressors are resolved (Wills, 1986), which in some cases may not happen if the coping

strategy does not effectively deal with the problem. One illustration of avoidance-based coping is Wills and Shiffman's (1985) stress-coping model, which has been used extensively in research on substance use. This model suggests that substance use may provide a temporary alleviation of distress, but that reliance on substances as a coping behaviour can prevent the development of alternative coping strategies, which leads to a number of problematic outcomes for the individual. The same stance is adopted in this thesis with regard to internet use.

Folkman and Lazarus (1988) have suggested that coping is a mediator of emotional states and changes the original relationship between the antecedent (in this thesis, psychosocial well-being) and the outcome variable (in this thesis, problematic outcomes of internet use) (p. 311). For example, avoidance-coping is one of the most popular ways for people to deal with stress as it neutralizes the distress emotions via certain behaviours (Folkman & Lazarus, 1991; Shiffman & Wills, 1985). When successful, such strategies can make the person feel better by reducing the impact of emotional stress and anxiety (Billings & Moos, 1981; Collins, Baum & Singer, 1983); however they can also be maladaptive as they draw the person's attention away from a problem that may need to be addressed, leading to potentially problematic situations (Lazarus & Folkman, 1984; Wills, 1986). Lazarus and Folkman (1984) also emphasize the importance of distinguishing the process of coping from the outcome of coping. To say that a person has coped successfully with a situation implies a different conceptual system from that involved in examining the process of coping, which is the behavioural action through which a person manages difficult life situations. This thesis is concerned with understanding whether excessive internet use can be likened to a process of coping, not whether or not the coping was successful. Determining the efficacy of coping

behaviours is a complex issue which has generally not been addressed in the literature (Wills, 1986).

Furthermore, Wills (1986) writes that if a coping behaviour is relevant for adaptation under stressful conditions, then an interaction between the stressor and the coping behaviour is expected (p. 505). This has been termed a buffer interaction because it suggests that coping protects (buffers) people from adverse effects (Cohen & Wills, 1985). Specifically, it has been proposed that coping behaviours relevant to certain health outcomes should be most strongly related to outcomes at high levels of the stressor and less related to outcomes at lower levels of the stressor (Wagner, Myers & McIninch, 1999). This will be analyzed in the empirical sections of this thesis.

2.6 Coping Behaviour in Research on Excessive Internet Use

It needs to be reflected here that the idea of excessive internet use as a coping behaviour is frequently mentioned in the literature on internet addiction, but rarely empirically investigated. In the psychological literature, it has sometimes been proposed that the addictive process is a way to cope with life stressors (Davies, 1992; Wills & Hirky, 1996; Shiffman & Wills, 1985; Wagner et al., 1999). However, this perspective on addiction is not fully compatible with claims in the internet addiction literature. A coping behaviour is grounded in flexible thoughts and acts that help solve or avoid problems (Lazarus & Folkman, 1984), although it may be maladaptive in the long run, while the literature on internet addiction most often assumes that the person has lost control. This incompatibility may explain why the idea of excessive internet use as a coping behaviour is often mentioned but never used as a focal point in empirical research. Because the medical paradigm has

47

been the dominant paradigm in studies of addiction in general (Shaffer, 1986) and, arguably, within the internet addiction literature in particular (Shaffer et al., 2000), a framework of addiction, adhering to criteria and theory from the DSM, has been the most common theoretical basis for research. However, studies of internet addiction are frequently concluded in ways that explain excessive internet use as a coping behaviour, but without explicitly mentioning this. Since the two perspectives are not easily reconcilable, this result in an incompatibility between theory and conclusions that is visible in much of the existing research. This may be one reason for the lack of theoretical development in this area of study (Widyanto & Griffiths, 2006; Shaffer et al., 2000). It needs to be said here that researchers may aim to conduct studies that are more in line with a psychological paradigm, even one suggesting excessive internet use as a coping behaviour, but the appropriation of the existing measurements, which are almost exclusively based on the DSM, means that -- involuntarily perhaps -- they end by having one foot in each paradigm.

To illustrate, consider an early study by Armstrong, Phillips and Saling (2000), who sought to identify psychological predictors for internet addiction. They used to measure internet addiction an adapted scale based on DSM-4 (APA, 1994) criteria for substance abuse together with a measure of self-esteem. The study therefore adheres to a perspective of addiction as a mental disorder. However, the researchers conclude that "the association with self-esteem suggested that heavier internet users are using the internet as an escape" (p. 547). This is closer to a psychological interpretation of addiction as a coping behaviour. They further state that "rewarding activities can be potentially addictive, and will be viewed as addictions in a climate of social disapproval, with the addict having choice with regard to the modification of physiological state while responding to needs of arousal" (p. 548). This

represents what Shaffer (1986) refers to as a sociologist's perspective on addiction as a form of social control. Armstrong and colleagues thus start from a medical perspective through which addiction is seen, via their DSM-4 measurements, as a mental disorder signified by loss of control, but conclude with findings that fit better within a psychological perspective on addiction as a coping behaviour or a sociological perspective on addiction as a form of social control. While it is not in itself a problem that a study starts with one perspective and finishes with another (indeed, this could be seen as an important theoretical leap), the study does not recognize the conflicting perspectives, nor does it make any recommendations for how to reconcile the different perspectives in future work.

In another study, by Lemmens, Valkenburg and Peter (2011), which also approaches internet addiction by drawing on DSM-4 measurements, it is stated that: "the general concept of pathological gaming has gained widespread acceptance among researchers as a legitimate behavioral disorder" (p. 144). This situates the study within a medical perspective. However, the conclusion of the study is that excessive gaming may be a way to avoid real-life problems like loneliness or low self-esteem through virtual social contact or achievement (p. 150). This fits with what Lazarus and Folkman (1984) would call a coping strategy, either problem-focused or avoidance-based. Despite the fact that these findings can be explained from a perspective of coping, the authors only consider them through a medical perspective and through the DSM's notion of pathology, stating that "some adolescents with pre-existing psychosocial vulnerabilities are more easily drawn into pathological involvement with this form of recreation" (p. 150). Like Armstrong et al. (2000), the authors of this study start from a medical perspective, transition through an important interlude where the findings suggest several plausible reasons for problematic outcomes, of which one is excessive use as a

coping behaviour, and yet they conclude with interpretations based on the medical paradigm. As illustrated by these examples, findings that may be explained through psychological or sociological perspectives are instead described as evidence of mental illness. This highlights the aforementioned problems of only approaching the matter of excessive use from one theoretical perspective, which blinds the researcher to alternative explanations (Gambino & Shaffer, 1979; Shaffer, 1986; Griffiths, 1996, 2005; Shaffer & Kidman, 2003).

2.7 Behavioural Addictions

While the historical use of the term addiction has been limited almost exclusively to substance use behaviour patterns and their problematic consequences, contemporary research on addiction is not only concerned with substances (Griffiths, 1996; Shaffer & Albanese, 2004). Researchers have now begun to consider the matter of behavioural addictions (Marks, 1990), which makes the construct of addiction more complex. Some examples of suggested behavioural addictions are gambling (Griffiths, 1996), overeating (Orford, 1985), sex (Carnes, 1989), exercise (Glasser, 1976), pair bonding (Peele & Brodsky, 1975) and wealth acquisition (Slater, 1980). According to Bradley (1990), the factor common to all conditions referred to as a behavioural addiction is that they consist of goal-driven, repetitive sequences of behaviours that are maladaptive in nature (p. 1417). Marks (1990) adds that the label is given to behavioural excesses that have no external substance as a goal, while the ingestion of a substance would denote what he refers to as a "normal" addiction. Marlatt et al. (1988, p. 224), attempt a comprehensive definition, this time from the paradigm of psychology, of behavioural addiction as:

… a repetitive habit pattern that increases the risk of disease and/or associated personal and social problems. Addictive behaviours are often experienced subjectively as 'loss of control' – the behaviour contrives to occur despite volitional attempts to abstain or moderate use. These habit patterns are typically characterized by immediate gratification (short-term reward), often coupled with delayed deleterious effects (long-term costs). Attempts to change an addictive behaviour (via treatment or selfinitiation) are typically marked with high relapse rates.

Compared with the definition by Dorland (1974) from the medical paradigm, presented on page 42, this definition focuses not only on drugs and on signs for identification, but also describes general patterns of behaviour, subjective feelings and potential treatment outcomes. However, as noted earlier, there is no consensual agreement on how to define an addiction and the construct of behavioural addiction represents another view of addiction from a paradigm different from the medical one.

As Griffiths (1996) writes, most people have their own idea of what constitutes an addiction, but actually defining this is notably difficult. Vaillant (1982) noted that recognizing alcoholism ultimately was similar to identifying a mountain or season; when confronted with these things we know them implicitly. In essence, Griffiths suggests, the whole is easier to recognize than the parts – this, he claims, is why the way to determine whether behavioural addictions are addictive in a non-metaphorical sense is to measure them against clinical criteria for other, established, drug-ingesting addictions (p. 20). For example, Marks (1990) notes that the urge of behavioural addicts to engage in their routine and their discomfort if prevented from completing it resemble respectively the craving and withdrawal symptoms

of substance abusers. Indeed, syndromes[11] of behavioural addiction share additional features with those of substance abuse, primarily problems with impulse control and self-regulation, which is yet another reason why behavioural excesses have been conceptualized as a form of addiction (Griffiths, 1996). However, a notable problem with identifying commonalities between substance-related and behavioural addictions is that, in the words of Brown (1993), "one might be excused for thinking that all of life was involved with acquiring addictions, having addictions, or avoiding addictions" (p. 251). Brown's (1993) argument, reminiscent of Allen Frances's earlier remarks, is that the boundaries of the concept of addiction are not well-defined and that, through the diagnostic expansion that behavioural addictions represent, the concept is in danger of being drawn so widely and made so inconclusive as to become almost meaningless (p. 251). Griffiths (1996) has even argued that for some people there may be many benefits to their addictions (p. 20). These include reliable access to mood changes (e.g. escapism), positive experience of pleasure and excitement, as well as offering a coping strategy for vulnerabilities (e.g. insults, social anxiety, tension). In light of this, the difference between a behavioural addiction and a habit or hobby remains unclear.

2.8 Internet Addiction

At the annual meeting of the American Psychological Association (APA) in 1996, psychologist Kimberly Young presented the first empirical study of internet addiction, *Internet Addiction: The Emergence of a New Clinical Disorder.*[12] Her research was presented against a background of anecdotal reports suggesting that some people were becoming addicted to

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[11] A collection of signs and symptoms observed in, and characteristic of, a condition.
[12] The paper was published in *Cyberpsychology & Behaviour* two years later, in 1998. This is why some of the references to her work are dated 1998 even though the actual presentation was given in 1996.

the internet in a similar way to that in which others became addicted to drugs, alcohol or gambling (Young, 1996, p. 1). Issues reported included levels of internet engagement that led to academic failure (Brady, 1996; Murphey, 1996), deteriorating work performance (Robert Half International, 1996) and marital discord (Quittner, 1997). The purpose of Young's study was to investigate whether internet use could be considered addictive and to identify the extent of problems created by such misuse (Young, 1996, p. 1). Because addictions were not acknowledged in DSM-4[13] (APA, 1994), Young adopted existing criteria from the DSM-4 diagnosis of pathological gambling, which was deemed to be most akin to the pathological nature of internet use. This resulted in a brief, eight-item diagnostic questionnaire where eight out of 10 original items from the scale for pathological gambling were retained and slightly modified; the word "gambling" was changed to "internet" (see Table 2.1 below). Internet addiction therefore came to be defined as an impulse-control disorder not involving an intoxicant (Young, 1996). An important feature of an impulse-control disorder is the characteristic loss of control. The connection between impulse-control disorders and addiction has been suggested by many researchers working on drug and alcohol addiction (Marks, 1990; Larkin & Griffiths, 1998). This makes intuitive sense because a defining feature of addictive behaviour is the inability to resist despite knowledge of adverse consequences.

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[13]DSM-4 distinguished, rather, between abuse and dependence, on the basis of the concept of abuse as a mild or early phase and dependence as the more severe manifestation.

Table 2.1: *Young's Diagnostic Questionnaire for Internet Addiction (1996)*

Questions
1. Do you feel preoccupied with the Internet (think about previous online activity or anticipate next online 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 mood (e.g., feelings of helplessness, guilt, anxiety, depression)?

As we can see in Table 2.1, most of these criteria have the same basis as the medical definition of addiction (see page 23): craving (1), tolerance (2, 5), withdrawal (4), adverse consequences (6, 7) and relapse (3).

Young proceeded to publish a book on the subject, *Caught in the Net* (1998), in which she expands on the original diagnostic criteria and adds a further 12 items, aiming to capture her notion of internet addiction (see Table 2.2 on page 61 for the complete scale). This scale became known as the Internet Addiction Test (IAT) and has come to dominate internet addiction research, probably due to its simplicity rather than its accuracy (Byun et al., 2009). A closer look at the empirical part of Young's work (1996, 1998), which led to the

development of the IAT, reveals an account of individual comments and stories from open-ended survey questions. The respondents were asked to write about what problems, if any, internet use caused in their lives (1996, p. 3). There are paragraphs detailing how individuals reported spending less time on other important activities, experienced academic or work-related problems, had feelings of tolerance and withdrawal, suffered from conflicts with family members or partners, developed financial problems, disrupted sleep patterns and had an inability to quit using the internet despite experiencing these problems. From a medical perspective, this seems to support Young's proposal that internet use may be characterized as an addiction of the impulse-control disorder spectrum (1996).

However, stepping outside of the medical paradigm, Young's findings have also been challenged on the basis of a broader perspective than the normative addiction discourse. As Bergmark, Bergmark and Findahl (2011) have discussed, "When the [addiction] language, programme and ideology is established in the group from where respondents are found, it should not be surprising if respondents spontaneously present narratives on e.g., withdrawal, loss of control and craving." (p. 4491). In other words, Young's respondents may already have been primed to give responses corresponding to the ways in which we talk about addiction, since a majority of respondents were self-reported internet addicts and recruited because of their internet-related problems (Young, 1996, p. 4). This may explain why the narratives found by Young resemble typical expressions of an addiction corresponding to the DSM-4 classification for pathological gambling, since her sample contained only individuals who self-identified as addicted to the internet. Therefore the validity of her results is questionable due to possible sampling bias, which in turn calls into question the validity of the IAT. Shaffer et al. (2000) write that, although excessive computer

use can be discussed within an addiction framework (as can most things), it is yet to be established that internet addiction is a valid construct. As was mentioned earlier, Shaffer et al. (2000) argue that the construct of pathological gambling, which is the basis of Young's theory and of her measurement for internet addiction, is in itself a fairly recent development that is still open to debate (National Research Council, 1999), and that the extent of its overlap with other disorders is still unknown (Shaffer et al., 2000; Ko et al., 2005). This has been raised as an issue for the construct validity of the IAT (Shaffer et al., 2000), but has not yet been addressed. It is also worth noting here that the validity of diagnoses in the DSM is generally considered to be weak, since the focus is on face or clinical validity, which is the assertion that the diagnosis corresponds to clinicians' subjective view of a disorder (Kraemer, 2007). This is not necessarily a problem in clinical practice as clinical validity requires consensus amongst experts in the area of a particular disorder, and such consensus then drives modifications to the DSM (Kraemer, 2007, p. 9), but it may be more problematic for research that relies on proper construct validity.

Some studies have explored potential issues with the construct validity of Young's IAT by assessing the relevance of her criteria in a more clinically oriented setting. For example, Shapira et al. (2000) qualitatively examine psychiatric features of individuals with problematic internet use and find problematic internet to be associated with distress, functional impairment and other psychiatric disorders (p. 272). However, like Shaffer et al. (2000), Shapira et al. (2000) note that it is unclear whether problematic internet use is a distinct disorder (e.g., an impulse-control disorder) or a consequence of an underlying psychiatric illness, or both. Problematically, a closer look at the recruitment process used by Shapira et al. (2000) reveals similar issues to those noted with regard to Young's (1996)

study. Shapira et al. (2000) investigated the behavioural characteristics, psychiatric comorbidity and family psychiatric history of individuals who self-identified as addicted to the internet via face-to-face standardized psychiatric evaluations. Their respondents were defined as:

> Men and women, 18 years of age or older, who had problematic internet use for at least six months were recruited. Problematic internet use was defined as (a) uncontrollable, (b) markedly distressing, time-consuming or resulting in social, occupational or financial difficulties and (c) not solely present during hypomanic or manic symptoms. (p. 268)

Their results show that "All (100%) subjects' problematic internet use met DSM-IV criteria for an impulse control disorder" (p. 267), which supports Young's (1996) conceptualization. However, the recruitment criteria highlight the possibility that the addiction language and ideology were firmly established during the recruitment process, which could have influenced the interview process and caused a sampling bias similar to that in Young's (1996) study. Furthermore, the argument of Shapira et al. (2000) seems almost circular because problematic internet use is defined by criteria corresponding to an impulse-control disorder. Obviously, then, those who met the criteria for problematic internet use (i.e. everyone who was recruited) would also meet the DSM-4 criteria for an impulse-control disorder, since the criteria were identical. What the study may have found, it may be seen in retrospect, is that people who can be diagnosed with an impulse-control disorder may also find that their internet use is uncontrollable – but this is not the same as problematic internet use being an impulse-control disorder.

To exemplify in detail why the construct validity of the IAT matters, I will discuss how several items in the IAT are heavily context-dependent and may be interpreted differently depending on cultural considerations and societal change (Jacobs et al., 2013) or on the life situation of the respondent. Taking a closer look at the individual items of the IAT (see Table 2.2 below), seven items seem plausibly to measure problematic outcomes resulting from internet use (2, 5, 6, 8, 13, 17, 18). Eight items are ambiguous and may, on the one hand, indicate a problematic outcome (1, 3, 7, 9, 10, 14, 19, 20), but may, on the other, indicate a healthy interest in an online hobby (1, 7, 14, 19) or depend on factors other than internet use, such as an unhealthy relationship (3), a stigmatized online hobby such as gaming or gambling (9), or a difficult real life situation (10, 20). Four items may indicate a passionate interest in a hobby, where a lot of time spent online is a desirable outcome (11, 12, 15, 16). In other words, several items in Young's IAT are questionable when viewed through a non-medical lens. Some of these behaviours could be seen as contemporary forms of entertainment or communication or as a response to particular life problems. Arguably, many of these behaviours are facilitated rather than caused by the internet, which is another common point in critiques of the medical theory of internet addiction (Griffiths, 1996; Shaffer, 2000).

Table 2.2: *The Internet Addiction Test (Young, 1998)*

Questions
1. How often do you find that you stay online longer than you intended?
2. How often do you neglect household chores to spend more time online?
3. How often do you prefer the excitement of the Internet to intimacy with your partner?
4. How often do you form new relationships with fellow online users?
5. How often do others in your life complain to you about the amount of time you spend online?
6. How often do your grades or schoolwork suffer because of the amount of time you spend online?
7. How often do you check your e-mail before something else that you need to do?
8. How often does your job performance or productivity suffer because of the Internet?
9. How often do you become defensive or secretive when anyone asks you what you do online?
10. How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?
11. How often do you find yourself anticipating when you will go online again?
12. How often do you fear that life without the Internet would be boring, empty and joyless?
13. How often do you snap, yell or act annoyed if someone bothers you while you are online?
14. How often do you lose sleep due to late-night log-ins?
15. How often do you feel preoccupied with the Internet when offline, or fantasize about being online?
16. How often do you find yourself saying "Just a few more minutes" when online?
17. How often do you try to cut down the amount of time you spend online and fail?
18. How often do you try to hide how long you've been online?
19. How often do you choose to spend more time online over going out with others?
20. How often do you feel depressed, moody, or nervous when you are offline, which goes away once you are back online?

Furthermore, while it is understood that internet addiction is diagnosed only when several symptoms occur together, the point-based Likert scale makes it possible to receive a relatively high score merely on the basis of using the internet as a hobby. In research it is common to use an arbitrary cut-off point to distinguish addicts from non-addicts, which means that anyone who scores above a certain point can be said to be addicted irrespective of the contexts and purposes of their internet use. The IAT arguably risks labelling healthy users as addicted when it neglects the fact that people may have good reasons for using the internet excessively and may do so in ways that are not necessarily harmful in the long run (Griffiths, 1996). We can recall that this is similar to what happens with drug use, where many clinicians consider heavy use equal to abuse (Shaffer & Albanese, 2004). This echoes Davies's (1992) warning that people who are sometimes labelled as addicts may actually be using voluntarily, because it is fun or makes sense to them given the context (Griffiths, 2005). Approaching such individuals from a medical paradigm of addiction is precisely what Jacobs et al. (2013) cautioned against, warning that a case that calls for specialist judgment based on deep insight into each individual is subjected to generalizations and broad cut-off points with potentially stigmatizing consequences.

It needs to be reflected here that Young's (1996) and Shapira et al.'s (2000) conceptualization of excessive internet use as an addiction on the impulse-control disorder spectrum originated during a time when internet use was still on the rise and therefore questions of normal versus excessive use may not have seemed as important. As we can see in Figure 2.1, in the early 1990s not many people had internet access, which made excessive internet use a fringe behaviour. Addiction may have been a logical explanation for excessive

internet use at that time because it was unusual for people to spend a lot of time online and little was known about the reasons and motivations for doing so.

Figure 2.1: *Total Number of Internet Users in the World, 1993-2014*
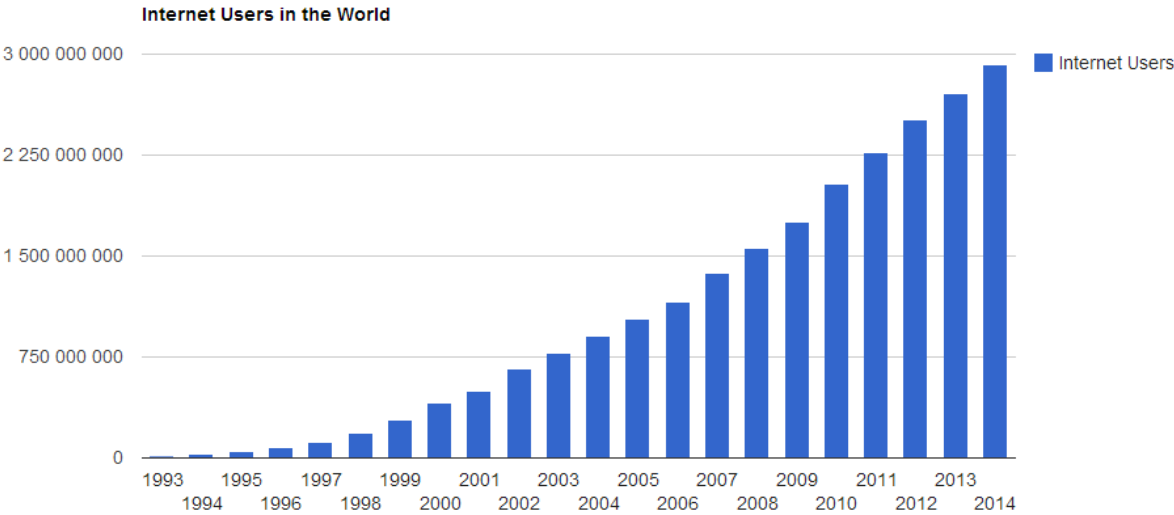
Data from the International Telecommunication Union and United Nations Population Division

Figure 1 shows that since the mid 1990s there has been a sharp and steady increase in the number of internet users in the world. Data from the Pew Research Center (2014) shows that in the United States the percentage of the population who use the internet increased from 14% in 1995 to 86% in 2013. Just between 1995 and 2002 the percentage more than quadrupled, from 14% to 61%. In the United Kingdom figures are similar in that the number of daily users more than doubled from 17 million in 2006 to 38 million in 2014 (Office for National Statistics, 2014). Because of the dramatic increase in access to the internet and its dispersion in the home and via mobile phones during the late 1990s, what may once have seemed like deviant behaviour has arguably become the norm. This reflects the importance of societal change in discussions of addiction, since behaviours that are considered excessive or deviant at one point in time may become accepted and normative a few years later

61

(Grohol, 1999). Research dating back 10 or 15 years tends to present numbers that, if considered valid today, would lead to most of us being diagnosed with an internet addiction. For example, Morahan-Martin and Schumacher (2000) suggest that 8.5 hours a week is enough to classify an individual as addicted. Contemporary research places less emphasis on hours spent online, suggesting that this is not a direct function in diagnosing internet addiction (Young & de Abreu, 2011). However, this is not reflected in practice, as most measurement instruments for internet addiction focus heavily on time spent online due to their application of the IAT, which equates a large amount of time spent online with problematic outcomes even when no evidence of actual harm is present.

Despite some criticism of the validity of Young's IAT and its theoretical foundation (e.g., Grohol, 1999; Ko et al., 2005; Cover, 2006; Shaffer et al., 2000), researchers in the field have continued to explore excessive internet use through this construct. In addition to Young's (1996) seminal text, another study often cited is that of Davis (1999; 2001), perhaps because he was the first to suggest an alternative theory for excessive internet use: a cognitive-behavioural model. Davis argues, like Grohol (1999), that the number of people experiencing problematic outcomes to their internet use has been greatly exaggerated both by the media and by psychologists using unreliable or invalid methods (Davis, 2001, p. 188) Davis's (2001) main contribution to the field has been his proposal to divide occurrences of pathological internet use into two distinct types: specific and generalized use. He has suggested that specific pathological use includes people who are dependent on a specific function of the internet, such as online sexual material, online auctions or online gambling. These dependencies, he argues, are content-specific and would also exist in the absence of the internet, i.e. as some form of sex addiction, shopping addiction or gambling addiction (2001).

Generalized pathological internet use, on the other hand, he argues, involves a general overuse of the internet, presumably related to online social activities like chat or email. Crucially, his theory posits that pathological internet use results from problematic cognitions coupled with behaviours that either intensify or maintain the maladaptive response (p. 188). In other words, a lack of self-esteem may prompt a person to go online in order to achieve non-threatening positive feedback from others. This is similar to the view of excessive use as a coping behaviour suggested in this thesis, but Davis (2001) argues that the excessive use is a consequence of operant conditioning rather than of goal-oriented coping. In this respect, his model is more similar to the animal experimental model of coping processes, where the coping behaviour is a learned response (e.g., Miller, 1980). He argues that individuals learn from their internet experiences and that if the response is positive they are reinforced to continue the activity as long as they receive a satisfying physiological response.

Even though Davis's (2001) theory has received some attention in the literature, it has been largely sidelined by the dominant model of internet addiction as a mental disorder, as pioneered by Young (1996, 1998). Research on internet addiction gained momentum during the early 2000s and produced plenty of findings regarding the psychological antecedents of problematic outcomes of internet use. Additional measurement instruments were also produced during this time to address the poor validity of the IAT; one example is the Chen Internet Addiction Scale (CIAS), which has been used extensively in Asian countries (Ko et al., 2007; Yen et al., 2007; Ko et al., 2009; Lu et al., 2010). Another example is the Compulsive Internet Use Scale (CIUS) introduced by Meerkerk et al., (2009) and the Videogame Addiction Test (VAT) introduced by van Rooij et al., (2011). There are many more instruments that have been created over the years and it is worth noting that the excessive

(!) development and use of different measurement instruments has been argued to be one of the main problems for studies on internet addiction because this makes it difficult to compare findings across studies (Byun et al., 2009; Kuss & Griffiths, 2012). Problematically, all measurements derive more or less from Young's IAT (1996) and still suffer from problems with validity.

Researchers have explored the etiology of internet addiction using compound scores from the IAT or similar instruments in order to find unique predictors or risk-factors. Examples of psychological variables that have been explored are depression and suicidal ideation (Kim et al., 2006), self-esteem and sensation-seeking (Armstrong et al., 2000; Widyanto & McMurran, 2004), loneliness and shyness (Caplan, 2002, 2003, 2005; Whang, Lee & Chang, 2003), locus of control (Chak & Leung, 2004), attention-deficit/hyperactivity/impulsivity symptoms (Yoo, Cho & Ha, 2004), various measures of psychosocial well-being (e.g., Caplan, Williams & Yee, 2009; Lemmens, Valkenburg & Peter, 2011; Young & de Abreu, 2011), as well as the association with personality traits (e.g., Leung, 2007; Lo, Wang & Fang, 2005; Whang et al., 2003). Treatment for internet addiction is still in its infancy and only a few studies exist so far (Kuss & Griffiths, 2012), two of which focused on the efficacy of pharmacological treatment of the condition in children (Han et al., 2009; Han, Hwang & Renshaw, 2010). While the studies mentioned above represent only a handful of the collective body of research and the predictors examined so far, it is notably difficult to assess the relevance of the existing body of literature as the contribution to theory building has been limited (Widyanto & Griffiths, 2006; Shaffer et al., 2000). For example, almost all studies have found significant correlations between the IAT and the predictors mentioned above, but while this may seem like a promising result it has arguably diluted the literature.

The purpose of most studies have been to single out the predictors or risk-factors for internet addiction, but, judging by the results accumulated so far, it would seem that almost any psychological variable predicts internet addiction. If every characteristic appears as a reliable predictor this raises questions about the specificity of the instrument and the usefulness of such approaches (Bergmark et al., 2011). Rather than focusing on identifying particular predictors, this thesis will attempt to model the processes underlying problematic outcomes of internet use. This will be done by examining relationships between variables and explaining how they act and interact in the context of excessive internet use. This may be a more fruitful approach than focusing on identifying direct predictors only, as the contribution from such approaches has so far been limited from a theoretical perspective (Williams, Yee & Caplan, 2008; Widyanto & Griffiths, 2006).

In the attempts to identify single causal predictors for internet addiction, methodological issues have arisen that have received little to no attention in the literature so far. There has been a tendency to focus on the direct effects of psychological variables on internet addiction and these are then cited as valid predictors of the disorder if positive correlations are found. I believe that this approach needs to be further problematized, as it has created a false sense of theoretical development while masking underlying relationships that may only be discovered by more refined methods. To exemplify, studies that have examined direct effects of psychological variables often find that there is a significant relationship with internet addiction. It is then suggested that a particular variable is somehow important in the development of the disorder and needs to be considered when assessing at-risk populations and for purposes of treatment. However, a theory of why these variables cause internet addiction has yet to be presented. Furthermore, direct effect models only consider

65

the effect of each variable in isolation from other variables. Typically, studies only consider the direct effect of one or two variables at a time without controlling for other influencing factors or mediating effects (Kardefelt-Winther, 2014a). Williams et al., (2008) have described how communications research slowly went through a transition from direct effects models to more nuanced models via the addition of mediating variables. Such a methodological approach will be appropriated in this thesis, where both indirect and direct effects of psychological variables on excessive internet use will be explored by the use of multivariate methods.

2.9 Chapter Summary

To sum up the arguments made so far, a perspective on excessive internet use as an addiction has led to added conceptual confusion because the concept of addiction is not yet well-defined. I believe that this has caused a theoretical mismatch because studies have adopted a theoretical perspective of addiction, but presented findings that are suggestive of coping processes, which is a perspective better aligned with media studies, psychology or sociology. Currently, most researchers still work within an addiction framework where the pathophysiology, etiology, and comorbidity for internet addiction is being explored, together with its biochemical relationship with other addictions (Kuss & Griffiths, 2012). This approach hinders rather than facilitates theoretical development, as these perspectives are not easily unified unless a study specifically aims to do so. It is also notably difficult to draw conclusions from studies using an addiction perspective, as this perspective does not account for societal change or for different contexts of use. Ingleby's (1981) review of epistemological issues in psychiatry suggests that researchers sometimes delude themselves that all that is needed for theoretical development is ''more findings''. This seems to be

representative of the current state of internet addiction research, where virtually every psychological variable is being explored as a predictor in etiological models. What matters rather, Ingleby argues, are the fundamental principles which govern the acquisition and interpretation of ''findings''; and these principles, although they are governed by matters of fact, are not themselves discovered empirically – they are as much philosophical as scientific (1981, p. 24). What is needed, then, is not more findings, but a reappraisal of the kinds of explanation we should be looking for. I suggest here that such a reappraisal would enhance the future usefulness of studies of the problematic outcomes of internet use. I argue for a shift away from a perspective on addiction towards a theory of problematic outcomes as a consequence of coping behaviour, which would help to unify theory and conclusions both from previous and in future studies. Such an approach could even be applied in a post-hoc fashion to existing research, to re-frame its conclusions, and positions the thesis as an alternative to the dominant addiction perspective in the study of problematic outcomes of internet use.

The next chapter will present the conceptual framework used in this thesis in order to examine the proposal that excessive internet use may be characterized as a coping strategy for life problems that is sometimes followed by problematic outcomes. It argues that addiction and uses and gratifications frameworks can be combined into a framework which addresses the respective shortcomings of each perspective.

3. Conceptual Framework and Hypotheses

Chapters 1 and 2 presented some of the frameworks that have been involved in the study of addictions in general and problematic outcomes of internet use in particular. These frameworks stem from a variety of paradigms and therefore emphasize a different set of factors in their interpretations of and explanations for processes underlying problematic outcomes of internet use. The conventional framework is the addiction framework, which was derived from the study of drug and alcohol addictions. In the context of problematic outcomes of internet use this framework has emphasized psychosocial well-being as a likely causal predictor and this continues to be the most dominant approach (Byun et al., 2009). In contrast, relatively few studies on the problematic outcomes of internet use have come out of the media and communications research paradigm, perhaps because the phenomenon was initially framed as an addiction which as a topic has strong historical roots in the medical and psychological paradigms. Of the studies situated within a media paradigm, some have employed a framework which focuses on individual agency and needs in their explanations of problematic outcomes of internet use, where heavy media use is assumed to be a conscious process driven by needs and expected gratifications. These studies explored the problematic outcomes of internet use through uses and gratifications theory and by considering individual's motivations for internet use (Song et al., 2004; Yee, 2006; Caplan, et al., 2009; Kuss, Louws & Wiers, 2012). While other explanatory frameworks for have also been suggested in the literature (e.g., Davis, 2001), the addiction and the uses and gratifications frameworks are the two considered in this thesis. The addiction framework is important because of its dominance in research on problematic outcomes of internet use and I argue that a uses and gratifications framework is a strong complement because of its

focus on individual agency and on the needs and motivations for internet use, the lack of which has led to critiques of the medical framework (Brown, 1993; Cover, 2006; Jacobs et al., 2013, Kardefelt-Winther, 2014b). So far, addiction and uses and gratifications frameworks have rarely been compared or combined because the researchers who use them come from different paradigms, reflecting one of the persistent issues in studies of addiction as highlighted by Shaffer (1986; Gambino & Shaffer, 1979). To sum up, there have been few efforts so far to combine research conducted from an addiction perspective with that conducted from a uses and gratifications perspective into a combined framework.

This thesis questions the utility of an addiction perspective when applied in isolation, but recognizes that the psychosocial well-being of an individual is of key importance in the study of problematic behaviour. However, this thesis argues that psychosocial well-being is not only a direct predictor of problematic outcomes of internet use. Rather, it may trigger a set of needs and motivations that lead to certain kinds of internet use intended to cope with low well-being. These coping behaviours, when taken to excess, are what eventually lead to problematic outcomes (Lazarus & Folkman, 1984; Shiffman & Wills, 1985; Wills & Hirky, 1996). If we consider the problematic outcomes of internet use as a consequence of coping behaviour, then it is necessary to also understand the processes that underlie the coping behaviour in order to know where we need to direct our interventions. To examine these questions, a uses and gratifications framework is useful because of its focus on why people use different media sources, on how media use gratifies psychological needs, and on media use as a goal-oriented activity engaged in by active audiences (Katz & Foulkes, 1962; Katz et al., 1973; LaRose, Lin & Eastin, 2003). This thesis will therefore synthesize existing research on the psychological antecedents of problematic outcomes of internet use with research on

the uses and gratifications in internet use. It is argued that a uses and gratifications perspective provides insight into why people are motivated to go online and use certain media sources, which is crucial to also understand excessive use of these media sources. Furthermore, Sherry et al., (2006) have argued that it is particularly important to remember that motivations for media use vary across different media and to consider the key aspects of each new medium and how these shape the perceived uses and gratifications. In other words, if we assume that internet use is a way to cope with low well-being, this raises questions of how specific internet platforms are used for purposes of coping, and whether there are differences across the platforms due to their affordances. Therefore, this thesis will examine the processes underlying problematic outcomes across three different platforms in order to explore possible differences. The combined framework that seeks to explain excessive internet use as a coping strategy is depicted graphically in Figure 3.1.

Figure 3.1:   *Combined Model Explaining Problematic Outcomes of Internet Use*
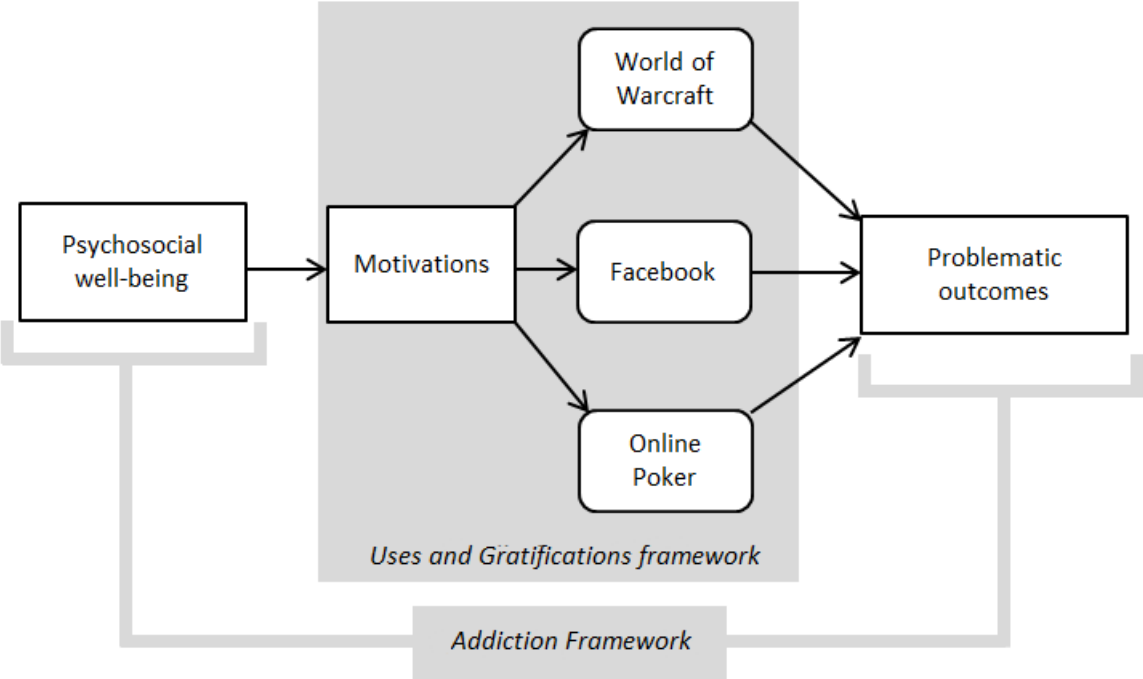
The model suggests that low well-being will motivate a person to go online and use platforms that keep negative thoughts at bay, which results in problematic outcomes if the use is repeated and excessive, as can be the case for some functional coping strategies (Lazarus & Folkman, 1984). This will be tested by examining whether the association between motivations for use and problematic outcomes depend on the psychosocial well-being of an individual. Hypotheses will be based on existing literature and explored across the three platforms described in the model.

It is important to reiterate that, although problematic outcomes of internet use are often tied to the amount of time a person spends online, a large amount of time spent online is not a direct cause of problematic outcomes (Young & de Abreu, 2011). According to the perspective taken in this thesis, problems arise because people chose to spend time online rather than doing other things that are deemed important. Even though this may seem like a moral or subjective judgment, it remains the case that the internet use causes certain problems in a person's life. The important question, then, is *why* a person chooses to spend a lot of time online despite experiencing problems. The challenge is to understand the *reason* why individuals are repeatedly motivated to use the internet excessively despite the drawbacks that follow. A majority of existing research suggests that the reason is addiction. This thesis suggests that the excessive internet use is a coping behaviour for low well-being, in which case cutting back on internet use may be undesirable. This is in line with Katz and Foulkes's (1962) suggestion that people use the mass media for coping purposes and tangential to Shiffman and Wills's (1985) theory of avoidance-based coping, as well as to Lazarus and Folkman's (1984) theory of the general coping process.

The addiction framework, as depicted in Figure 3.1, consists of two concepts: psychosocial well-being (1) and problematic outcomes (2). A common conclusion from empirical research using this framework is: ''Internet users who are highly stressed (1) are at risk of neglecting schoolwork (2) and having conflicts with parents due to their engagement with the internet (2)''. This thesis proposes a framework that incorporates motivations (a) as a mediating factor, which adds a purpose for the internet use into the explanation: "Internet users who are highly stressed (1) and want to escape reality and relax for a while (a) are at increased risk of neglecting schoolwork (2) and of having conflicts with parents due to their engagement with the internet (2)''.

As the example above illustrates, the benefit of incorporating motivations into the framework is that this elucidates the processes underlying the problematic outcomes. It allows researchers and clinicians to understand what the user is using the internet for and to interpret the problematic outcomes against the background of the motivations for going online and the well-being of the user. Crucially, it enables researchers to say something about *why* a person spends so much time online. This affords a discussion of whether the internet use may be beneficial and understandable despite the occurrence of problematic outcomes.

3.1. Synthesizing Divergent Literatures

One of the key assumptions in the addiction framework, as applied in research on internet addiction, is that psychosocial well-being has a direct influence on internet addiction and that this is the main causal factor. This supposes that people with psychosocial issues who use the internet are more likely to display a set of symptoms consistent with criteria for

pathological use according to DSM-4 (APA, 1993) or for addiction according to DSM-5 (APA, 2013). The most effective way to treat internet addiction, according to this framework, is to target the psychosocial issues through medical or therapeutic interventions. In contrast, a framework based on uses and gratifications theory assumes that people are motivated to use media according to their needs and expected gratifications (Katz et al., 1973). If people experience life difficulties their motivations may include behaviours that help them cope with negative feelings (Katz & Foulkes, 1962), and the expected gratification is a shift in focus from life stressors or problems to a rewarding game or enjoyable social interaction. Such behaviour can be both useful and maladaptive, and therefore followed by problematic outcomes (Lazarus & Folkman, 1984). In other words, a uses and gratifications perspective as employed here assumes that people's motivations to use media will be associated with more problematic outcomes and addiction-like symptoms (LaRose et al., 2003) because the greater their needs the more time they want to spend online to gratify these needs (Song et al., 2004).

However, this thesis argues that the addiction framework and the uses and gratifications framework can be usefully combined (Figure 3.1). Such a framework would consider psychosocial well-being and motivations for internet use together rather than separately and therefore be able to tell how these factors, each crucial within their own paradigm, interact to explain problematic outcomes of internet use. First, in accordance with the addiction framework, the combined framework proposed here assumes that psychosocial well-being has a certain direct influence on problematic outcomes of internet use. However, it is expected that part of the total effect of psychosocial well-being on problematic outcomes will be mediated and better explained by the motivations for using the internet. The

assumption is that problematic outcomes are not only caused directly by low well-being, but also influenced by the motivations for internet use, since the purposes of and motivations for media use are expected to have an impact on its outcomes (Shen & Williams, 2010). This means that an individual's psychosocial well-being should impact problematic outcomes indirectly through its influence on motivations for use, as well as directly. Furthermore, uses and gratifications theory assumes that the choice of media is partly influenced by our psychological state (Katz et al., 1973). Therefore it may also be expected that the association between motivations for internet use and problematic outcomes depends on the psychosocial well-being of the user.

In hypotheses the assumptions of the three frameworks can be described as follows:

H1: Individuals with low psychosocial well-being will experience more problematic outcomes.

H2: Motivations for internet use will be positively associated with more problematic outcomes.

H3: The association between motivations for internet use and problematic outcomes is moderated by psychosocial well-being.

H4: The association between psychosocial well-being and excessive internet use is partly mediated by motivations for use, as stipulated in Figure 3.2.

Graphically this can be depicted as in Figure 3.2.

Figure 3.2: *Graphical Depiction of Hypothesized Processes for Problematic Outcomes*
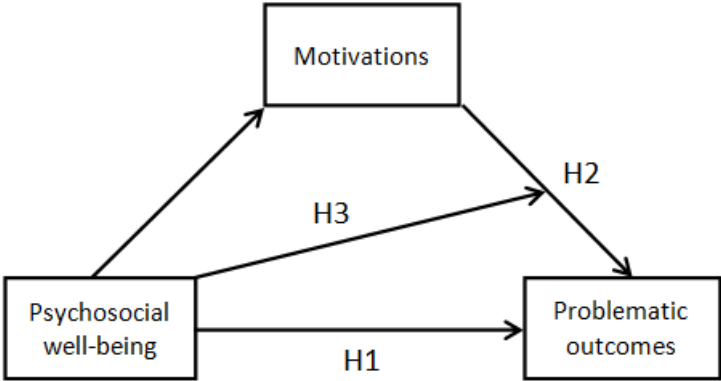
The hypotheses will be re-stated for each of the empirical chapters, where detailed platform-related hypotheses and models will be specified. Each chapter will examine a number of hypothesized processes underlying excessive use by focusing on the interplay between certain psychosocial variables and motivations for play based on assumptions made in the literature. As Figure 3.1 suggests, it is expected that different variables and interactions will explain problematic outcomes on each of the platforms.

This results in a final hypothesis:

H5: There will be differences between the platforms regarding which variables are associated with problematic outcomes.

H1 and H2 will be addressed by regression models where variables from both frameworks are included. H3 will be addressed by including interaction effects between motivations for use and psychosocial well-being as predictors of problematic outcomes. H4 will be addressed by testing proposed path models that theorise a causal chain whereby psychosocial well-

being impacts problematic outcomes directly and indirectly via motivations for use. H5 will be addressed by looking across the results of the three empirical chapters.

For the purposes of identification of potential problem users -- an important topic for DSM-5 in particular – the existence of mediating and moderating effects would suggest that clinicians determining whether treatment is necessary need to consider, in addition to the individuals' well-being, how and why they use the media. Evidence of a coping process may also give an indication of where to focus treatment efforts, since the interplay between motivations for internet use and psychosocial well-being could shed some light on the root of the problematic use. This is also important for researchers since it suggests that an addiction framework alone may not fully capture the processes underlying problematic internet use. Furthermore, an addiction framework suggests that psychosocial well-being is the primary factor that needs to be considered, while the combined framework presented here suggests that problems also result of the interplay between well-being and an individual's subsequent motivations for use, in addition to the impact of psychosocial well-being. This too has potential implications for treatment since it suggests that clinicians should be concerned not only about their patient's well-being, but about how their well-being relates to, or triggers, patterns of media use that may lead to problematic outcomes.

3.2. Describing the Elements of the Combined Framework

One reason for combining addiction and uses and gratifications frameworks is the assumption that a combination of the two can accomplish more than the parts. An addiction perspective on its own does not explain why psychosocial well-being is associated with more problematic outcomes of internet use because an addiction perspective is not concerned

with how or why the internet is used. On the other hand, a perspective on motivations for internet use grounded in a uses and gratifications perspective does not explain why certain motivations are more likely to lead to problematic outcomes (e.g., Caplan et al., 2009; Kuss et al., 2012) unless one draws on models of operant conditioning (e.g., Miller, 1980; Song et al., 2004), because the origins of the motivations are not typically examined in relation to an individual's well-being as in a coping framework, but rather in relation to their needs that are assumed to result from a variety of factors in addition to well-being. However, an integration of the two perspectives and the incorporation of their respective key components into one framework provide the tools necessary to contextualize and make sense of the findings uncovered by each field.

First, a measure of psychosocial well-being, as proposed by the addiction framework, needs to be included because coping strategies are assumed to be employed when a person's well-being is low (Lazarus & Folkman, 1984; Shiffman & Wills, 1985). Second, the motivations for internet use need to be included so as to be able to assess individuals' motivations for spending time online and to examine whether the association between these motivations and problematic outcomes of internet use depend on an individuals' psychosocial well-being. If this is the case, the process can be defined as a coping strategy (Shiffman & Wills, 1985; Wills & Hirky, 1996) that may result in excessive behaviour followed by problematic outcomes (Lazarus & Folkman, 1984). Motivations for internet use are examined in this study through a combination of measures from uses and gratifications theory (Katz et al., 1973) and Yee's (2006) theory of gaming motivations. Third, the internet platform needs to be considered because it is assumed that each platform affords a possibility of coping with different problems. Finally, a measure of problematic outcomes of internet use is required in

order to assess the interplay between psychosocial well-being and motivations for use in a context where problems are at a high level. These elements constitute the combined framework proposed in this thesis (see Figure 3.1) and each element will be described below.

3.2.1 Psychosocial well-being

The Merriam Webster dictionary defines psychosocial as involving both psychological and social aspects. Psychosocial well-being as a concept therefore loosely means well-being that relates to one's psychological state in interaction with a social environment. It was first used by developmental psychologist Erik Erikson (1959), who discussed psychosocial stages as part of his work on stages in social development. The concept of well-being has since been studied extensively from a psychological perspective. One early definition of well-being draws on Bradburn's seminal text (1969), where well-being distinguishes between positive and negative affect, mediated by the concept of happiness, where positive affect is related to higher well-being. Further developments were later proposed because Bradburn's initial conceptualization failed to recognize, for example, intensity and frequency of affect (Diener, Larsen, Levine & Emmons, 1985). In contrast, research from sociology proposed that life satisfaction was the key indicator for well-being (Andrews & McKennell, 1980). Yet other studies have proposed well-being as a measure of life satisfaction, but also including domain-specific questions such as those concerning work, income, social relationships and neighbourhood (Andrews, 1991). However, Ryff and Keyes (1995) argue that these early definitions of well-being do not actually engage with the question of what it means to be psychologically well (p. 719). They propose a multidimensional model of psychological well-being that includes several measures of well-being. While the variables included may change

from one study to another, they conclude that there is more to well-being than being happy and satisfied with life.

In studies of internet addiction, psychosocial well-being is a recurring concept. However, rather than examining psychosocial well-being as a unitary construct, these studies explore indicators for psychosocial well-being and how they relate to internet addiction. For example, Caplan (2002, 2003) explores the psychosocial variables of depression, self-esteem, loneliness and shyness. He argues that these concepts are all commonly used in the social sciences because of their high validity and reliability and may therefore be useful as potential predictors of excessive use (2002, p. 562). In another study, Lemmens et al., (2011) explore psychosocial causes of pathological gaming in a longitudinal study. Their concern is the lack of empirical evidence showing the direction of the association between psychosocial well-being and pathological gaming; despite plenty of research in this area it remains unclear whether low well-being is a cause or a consequence of pathological gaming. They note that, although it is theoretically plausible, so far there is little empirical support for the notion that pathological gaming decreases psychosocial well-being (p. 145). They examine satisfaction with life, loneliness, social competence and self-esteem as indicators of psychosocial well-being. Their findings suggest that lower psychosocial well-being generally precedes pathological gaming, although loneliness has been found to be both cause and consequence. This thesis explores four of the five variables included in the study by Lemmens et al. (2011) and also models the causal relationship between psychosocial well-being and problematic internet use according to a similar temporal frame, whereby psychosocial well-being precedes problematic outcomes of internet use (see Figure 3.1).

3.2.2 Uses and Gratifications theory

The first study of the Uses and Gratifications of media is considered to be Cantril's (1942) study of the gratifications that attract and hold audiences to the kinds of media and content that satisfy their social and psychological needs (Katz et al., 1973, p. 164). While the initial studies were concerned with the different media functions whose existence was suggested or confirmed by respondents, Katz et al. (1973) argue that studies of media "uses and gratifications" are ultimately an effort to understand effects (p. 164). They suggest that individuals use media according to their needs rather than being overpowered by them. This claim is particularly interesting for internet addiction researchers because it counteracts a fundamental claim of the addiction framework. Furthermore, Katz et al. (1973) argue that the selection of content and the uses to which it is put are considerably influenced by social role and psychological predisposition. This too is crucial for the internet addiction researcher because it suggests a causal relationship where psychological variables are followed by certain uses that can satisfy a person's needs.

Some argue that uses and gratifications theory is the dominant theory of media attendance (Palmgreen, Wenner & Rosengren, 1985). However, it has also been met by some critique. For example, LaRose and Eastin (2002) suggest that uses and gratifications theory does not predict media exposure very well in empirical work. They claim that, consistent with its application to other media, internet uses and gratifications studies typically explain less than 10 percent of the variance in internet usage in terms of gratifications. It is noteworthy that studies that measure prospective gratifications, that is gratifications that people expect from internet usage in the future as opposed to those they desire, tend to explain significantly higher amounts of variance in internet usage behaviour (e.g., Lin, 1999; LaRose, Mastro &

Eastin, 2001). In the end, although a great number of needs have been examined, people's use of media seems to arise from such core motivations as that of obtaining information, entertainment, social interaction (Ang, 1995) or escapism (Katz & Foulkes, 1962). However, Flanagin and Metzger (2001) state that, as the media change, so too do individuals' perceptions of their needs. Uses and gratifications research has been examined briefly in the context of internet addiction by Song et al. (2004), who found that social interaction and community building was strongly associated with internet addiction. The diversion construct, which includes relaxation, excitement and having fun, was found to be moderately associated with internet addiction, as was relationship maintenance (p. 390). For this thesis, it is important to note Rosengren's (1974) development of the initial model of uses and gratifications based on the work of Blumler and Katz (1974). Rosengren suggests a modified approach, essentially that:

> basic needs (1), individual differences (2), and contextual societal factors (3) combine to result in a variety of perceived problems and motivations (4-6) to which gratifications are sought from the media (7) and elsewhere (8) leading to differential patterns of media effects (9) on both the individual (10) and societal (11) levels. (Rosengren, 1974)

His proposed model captures part of the conceptual framework used in this thesis (see Figure 3.1), where it is proposed that psychosocial issues (1-3) prompt motivations for going online (4-6) in order to cope with these problems via certain internet platforms (7). However, this thesis does not conceive of the resultant excessive internet use as a media effect. Also, motivations as conceived of in this thesis are assumed to be more of a subconscious need than the goal-directed, expected gratifications in a uses and gratifications framework, but the latter provides a good starting point for theorising motivations for

internet use (Yee, 2006; Williams et al., 2008; Caplan et al., 2009). Furthermore, Rosengren's model justifies the temporal placement of psychosocial well-being, motivations and problematic outcomes in the proposed conceptual framework. This is further justified by the claim of Katz et al. (1973) that psychological factors are followed by certain uses and gratifications which satisfy a person's needs.

3.2.3 Motivations for online gaming

Yee (2006) argues that articulating motivational differences among users of online games is the precursor to understanding more complex behaviours and interactions in these environments (p. 10). Similarly to a uses and gratifications approach, Yee (2006) suggests that individuals choose the media they consume and have varied reasons for doing so. He proposes an empirical framework for identifying individual motivational differences among players of Massively Multiplayer Online Role Playing Games (MMORPGs), which is one of the most popular genres of online games today. One key purpose of his framework was to enable researchers to explore whether certain motivations were more highly correlated with certain usage patterns, in-game preferences or behaviours (Williams et al. 2008). As such, the motivations for online gaming described by Yee (2006) have been said to extend a uses and gratifications approach to media use specifically tailored to gaming: "Practically speaking, having a framework for discussing and measuring motivations for play among online gamers extends the tools of uses and gratifications theory for online gamers, and provide us with a means to better differentiate users beyond demographic information alone" (Williams et al. 2008). Because Yee's (2006) framework of motivations for MMORPG play can be seen as an extension of the original uses and gratifications framework it will be employed alongside it in this thesis. Similarly to a uses and gratifications approach, Yee's

framework categorizes players' orientation to online gaming as relating to three broad motivations: achievement, social interaction and immersion. The achievement motivation measures a player's desire to gain power, advance quickly and accumulate in-game wealth or status. Social interaction measures the desire to chat with others, form relationships with other players and derive a feeling of community from the game. Immersion measures the desire for role-play, to customize the appearance of one's character, to know things about the game that most other players do not know, and for escapism, i.e. to use the game to relax, escape from real life or avoid real-life problems (Caplan et al., 2009). Because these core concepts are similar to those emerging from uses and gratifications research, they will be merged to represent general motivations for internet use across online contexts. However, because immersion is a property that may relate specifically to online games rather than to other internet platforms, it will be replaced here by the motivation of escapism, which is a core concept of uses and gratifications theory (Katz & Foulkes, 1962).

3.2.4 Problematic outcomes of internet use

Problematic outcomes are measured in this study through a number of negative real-life outcomes that may follow excessive internet use. This component constitutes the dependent variable in the empirical part of the thesis (see Figure 3.1) and its magnitude is assumed to be related to the interplay between psychosocial well-being and motivations for use, as well as to the direct effects of each. Although problematic outcomes may result from excessive use, it persists because the outcomes are not only negative; according to the theories of coping described earlier (e.g., Lazarus & Folkman, 1984; Shiffman & Wills, 1985), excessive use as a coping strategy alleviates negative feelings and increases positive feelings. Even though such coping behaviour may be problematic in the long run due to neglect of

other important activities, it may still be undesirable to stop because the alternative would be worse. For example, individuals who are consistently stressed after work may go online in order to cope with this by immersing themselves in a game that affords escapism via its interactive, immersive or social features. In cases like this, where the motivation for going online is grounded in problems with stress and where the internet use alleviates the problem, an individual may need to consistently spend a lot of time online, which could lead to problematic outcomes while also making them feel better.

3.3 One Framework, Several Contexts

Specific applications appeared to play a significant role in the development of pathological Internet use as Dependents were less likely to control their use of highly interactive features than other on-line applications. […] However, greater research is needed to investigate how such interactive applications are capable of fulfilling such unmet needs and how this leads to addictive patterns of behavior. (Young, 1996, p. 246)

This quotation is taken from the conclusions of Young's (1996) seminal text on internet addiction. As Young describes, Internet use is not a monolithic process, and it is important to examine excessive internet use across a range of internet platforms. This opens up for investigating Young's claim that applications may fulfill different needs depending on their affordances. This section presents in more detail the internet platforms considered in this study.

3.3.1 World of Warcraft

World of Warcraft is a fantasy MMORPG released in 2004 by Blizzard Entertainment. It is the fourth game in the widely acclaimed Warcraft franchise. Currently, it holds the Guinness World Record for the MMORPG game with most subscribers and in 2012 it became the highest-grossing video game of all time, with a gross revenue of over US$ 10 billion (Douglas, 2012). It is worth noting that, at the time, the revenue from World of Warcraft was more than 10 times higher than the second-highest grossing video game. In January 2014, Blizzard Entertainment revealed that World of Warcraft players had created over 100 million accounts since the game's debut, and it is currently played in 244 countries across the globe. The storyline of World of Warcraft comprises over six million words, which is 12 times as long as the *Lord of the Rings* trilogy, and its wiki site has over 100,000 pages of content, making it the largest video game wiki in the world.

The core features of MMORPGs can be traced back to the traditional Multi-User Dungeon (MUD) genre, which was one of the first genres of video game created. MUDs, like MMORPGs, combine elements of role-playing games, adventure games, player-versus-player interaction, interactive fiction and chat options. While MUDs are usually text-based, modern MMORPGs implement a graphic virtual environment for players to explore through a first-person or third-person view. Each player controls an avatar and explores the landscape, fights monsters, completes quests and interacts with non-player characters as well as with other players. There are many goals with an MMORPG, but typically these focus on some form of character progression in terms of attaining higher levels, more power, more wealth or reaching more difficult in-game content. However, other equally worthy goals are social interaction, immersion, exploring as much of the game world as possible or collecting rare

objects. In World of Warcraft specifically, characters attain new talents and skills as they become more developed. They can also learn a variety of professions such as tailoring, blacksmithing or mining, with which they can craft their own objects to use or to sell.

Much of the gameplay in World of Warcraft revolves around completing quests. Completing a quest usually yields a reward in the form of experience points, items and in-game money. The quests are designed to drive the story forward and motivate the player to explore new areas and unlock more difficult content. While most quests can be completed by a single character, players can group with others to tackle more difficult content. The end-game challenges are designed in such a way that they can only be overcome by a large group of people; in the early days of World of Warcraft this meant that groups of 40 people with very advanced characters had to cooperate to beat the most difficult content. Over the years this has been scaled back somewhat and today most content can be beaten with groups of 10 or 20 players. World of Warcraft also allows for player-versus-player combat, where the options range from large scale battles of 40 versus 40 players on a massive playing field, down to two versus two in a small contained arena.

3.3.2 Facebook

Facebook is an online social networking platform founded in 2004 by a group of Harvard University students. Initially the website was conceived as a way for Harvard students and students at other Ivy League universities to interact socially. However, the site rapidly expanded and from 2006 onwards it allowed anyone above the age of 13 to join as long as they had a valid e-mail address. Facebook is currently (in 2014) the most popular social networking site in the world, with over 1.2 billion active users. Notably, Facebook's

popularity increased from just one million users in 2004 to over 750 million in 2011. The company reported revenue of over US$ 7 billion in 2013, with most of the revenue coming from advertising. The company is currently valued at around US$ 180 billion after an initial public offering.

As with other social networking sites, each Facebook user has their own profile where they can provide detailed information about themselves such as a photo, lists of personal interests, contact information, memorable life events and employment status. Users can communicate with others through private or public messages and share other online content via their own profile or by posting directly on another user's profile. Privacy is regulated by a range of settings where the user may choose who can see or interact with certain parts of their profile. The Friends list is a list of people who may view and interact with a user's profile, but even individuals on the Friends list can be restricted to access to only certain content. A user can update their status message, which is then visible on their profile page and broadcast to other users. The website currently features a news feed, which appears to every user and highlights new information from people on the user's Friends list. Facebook also features a "Like" button, which allows users to express their appreciation for status updates, photos or comments. Companies or groups can also create Facebook profiles to advertise their services or a cause. Private groups can be created for people who wish to network and share content in a restricted environment hidden from their public profile.

3.3.3. Online poker

Online poker is essentially a game of poker played over the internet. It can be played in a web browser, in an app, or through a downloadable piece of software designed by a

87

company. Recently, mobile content providers have started also offering poker on portable devices. According to media sources, the online poker scene has seen a huge upsurge in revenues, with a growth, for example, from US\$ 82 million in 2001 to US\$ 2.4 billion in 2005. More recent figures from industry sources estimate that the poker market annually grosses over US\$ 2 billion, despite recent regulation, and that revenues are likely to increase.

Online poker differs from traditional poker in a number of ways. The most obvious is that players do not sit across from one another and share the same physical space, which means that the ability to observe opponents' reactions and body language is removed. Another difference is that online poker allows the player to play many hands at once, effectively participating in a number of games at the same time. In bricks and mortar casinos this is not possible due to the inability to be in multiple places at once, but also because of the time required to deal cards and count chips. In online poker this is all done instantaneously, and the play tends to be faster because of action buttons where players can determine what their next move will be before it is their turn to play, thereby allowing them to focus on the other tables at which they are playing simultaneously. Furthermore, online poker tends to be cheaper than regular poker because the online poker rooms allow for lower bets than live poker tables. This means that they can play with lower bets and at many tables, which allows for safer and cheaper play and can help keep a player's income relatively stable, since they do not have to stake their entire bankroll on one higher-limit table. By playing at cheaper tables they keep losses smaller and tend to face less skilled opponents, but the overall earnings can still be relatively good because of the number of tables played. The companies that provide the online poker rooms still make a profit because there are fewer additional expenses by comparison with running a full-scale poker room in a casino.

Online poker rooms earn a profit via a number of different methods. The most common way is by collecting a rake from each pot, where the rake is calculated as a percentage of the total pot in a given game. As mentioned above, the expenses for running an online poker room are smaller than those of running a live poker table in a casino and therefore the rake is typically lower for online poker rooms, but due to the large amount of hands dealt per day this method still gives a good profit margin. Online poker also features a high number of smaller tournaments, where the host of the tournament collects an entry fee from each participant.

4. Methodology

One goal of this project is to combine addiction theory and uses and gratifications theory into a coherent framework that allows for a better understanding of the processes behind problematic internet use. The assumption is that variables from both frameworks may advantageously be combined and should be analyzed together rather than separately. By using a combined approach, processes that depend both on an individual's psychosocial well-being and on their motivations for use can be measured. Since these variables are assumed to be associated in different ways with problematic outcomes, data was needed that would enable an examination of these associations and their respective moderating and mediating effects on problematic outcomes. In order to model these associations, and to test how they may be associated with problematic use on different platforms, it was necessary to use quantitative modelling techniques. Therefore, in order to examine the proposed processes behind problematic outcomes of internet use, for this thesis survey data was gathered from users of three different online platforms. As survey data allow for statistical comparison between individuals and groups (Fowler, 1993), and also for the generalization of findings to populations, this enabled a comparison of data for the three platforms and also a comparison between groups of users who experienced more or less problematic outcomes.

This chapter begins by discussing the choice of sampling techniques for the thesis and the challenge of acquiring, via online data collection, samples which were representative of the intended populations. Pilot work and survey design are then presented, followed by the survey administration procedure. The samples are then presented and discussed in relation

to their characteristics and respective strengths and weaknesses as a consequence of the methodological choices made. The measures used to operationalize the concepts set out in Chapter 3 are then discussed, and an account given of how these measures were used to construct scales for analysis. Finally, this chapter discusses the statistical techniques and analytical approach used to answer the hypotheses. The chapter ends with some conclusions and further reflections on the expected and unexpected outcomes of data collection and scale construction.

4.1 Selecting Appropriate Sampling Techniques for Online Data Collection

The populations that the survey intended to cover were highly engaged players of World of Warcraft and of online poker, and users of Facebook. While Facebook users might have been relatively easy to reach with traditional paper-based surveys since so many people use Facebook, it would have been more complicated to reach World of Warcraft players and online poker players by such means since there are few common meeting places for these people offline. Online surveys were a convenient way to reach all three intended populations since the activities are primarily based online. There are a number of strengths of online surveys that supported this choice, such as ease of acquiring large samples, global reach, flexibility, speed and ease of data entry, and low administration costs (Evans & Mathur, 2005). Crucially, it is easy to reach an intended population because surveys can be advertised on sites that the target population is likely to visit (King, Delfabbro & Griffiths, 2009). Online surveys were also expected to be more inclusive of excessive and problematic internet users, since these individuals are presumably likely to visit sites dedicated to their online interests (King et al., 2009; Griffiths, Davies & Chappell, 2004; Wood, Griffiths & Eatough, 2004), and may have facilitated access for socially unskilled individuals who might

otherwise not have taken part in the research (Wood et al., 2004). This was important in order to ensure that the sample contained enough users experiencing high levels of problematic outcomes to facilitate analysis and comparisons between problem and non-problem users.

However, concerns about the representativeness of online samples may cast doubts on the validity of results derived from such data. Because this study sought to draw conclusions about behaviours on specific platforms, it was important to acquire a sample that was representative of the population on these platforms rather than representative of the general population. It was difficult to ensure that all members of the defined populations had equal opportunities for access to the survey since not every World of Warcraft or online poker player visits this type of forum; some are content with just playing. This needs to be taken into account when the generalizability of the results is considered (Granello & Wheaton, 2011; Wood et al., 2004). While surveying forum users may thus have been a practical approach, it may well have biased the sample towards people who frequently visit forums. However, this may also have had certain advantages because forum visitors are also likely to be highly engaged users, who were the intended target population. This means that these samples may not be representative of players in general -- an issue for the generalizability of the findings -- but they may still be adequate for the purposes of this thesis, which sought to target players who were more engaged than most.

Another issue was that, for the World of Warcraft and online poker samples, data collection via surveys posted on forums was based on self-report and volunteer sampling rather than on probability sampling, which raises potential issues with the non-randomness of the

sampling process and the reliability of the survey (Lefever, Dal & Matthiasdottir, 2006; Schleyer & Forrest, 2000). The challenge for a researcher relying on self-report measures is to be aware when these are inappropriate, but it is also important to acknowledge the appropriate uses and values of self-report (Spector, 1994). Spector and Brannick (1995) discuss how one problem with self-report is that answers to sensitive topics are likely to be influenced by social desirability. However, online surveys can have advantages over offline surveys in this regard because a relatively high degree of anonymity can be maintained, which reduces the influence of social desirability on the responses (Joinson, 1999; Wood et al., 2004).

The intended sampling technique for Facebook was chain referral sampling,[14] where a sample is collected through "referrals made among people who share or know of others who possess some characteristics that are of research interest" (Biernacki & Waldorf, 1981, p. 141). In its simplest formulation, this type of sampling technique consists of identifying respondents who are then used to refer the researcher to other potential respondents. While this technique was initially applied by sociologists, in particular for research concerned with vulnerable or hard-to-reach populations such as addicts (Biernacki & Waldorf, 1981), it has more recently been applied in online data collection through social networking sites and has been confirmed as a useful approach that extends the advantages of traditional chain referral sampling (Baltar & Brunet, 2012). One advantage is that this technique allows researchers to sample groups of people who are hard to detect because their behaviour is socially stigmatized or unknown, which leads to there being fewer locations in which to

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[14] Also referred to as snowball sampling (see Biernacki & Waldorf, 1981).

approach them (Baltar & Brunet, 2012). Wood et al. (2004) write that for these reasons chain referral sampling can be a very effective technique for online data collection if the research sounds interesting enough to the targeted population. Ideally, the respondents initially selected in a chain referral are randomly chosen, but this is difficult in practice and it is more common to initially select respondents on the basis of convenience sampling (Baltar & Brunet, 2012). This study followed a convenience sampling method, where friends and colleagues of the author were asked to display a short status message that encouraged their Facebook Friends to participate in the survey and to share it amongst their own Friends. While the initial respondents were deliberately chosen for their differing nationalities, ages, occupations and educational backgrounds, in order to ensure a more representative sample, the convenience sampling is likely to have influenced the sample composition (Magnani et al., 2005). Therefore, the Facebook sample is unlikely to be representative of the general population, but expected to be biased towards my own characteristics and background, which may lead to some issues with the external validity of the findings (e.g., Fricker & Schonlau, 2005). Still, as Wong (2008) argues, there are other aspects that must be considered in relation to external validity, such as the importance of theory and the appropriateness of the sample to the research objectives.

4.2 Pilot Work and Survey Design

A total of fifteen cognitive interviews were carried out to assist in survey construction. This method has emerged as one of the more prominent methods for identifying and correcting problems with survey questions in terms of how well they generate the data the author needs, as well as assessing the quality of the responses (Beatty & Willis, 2007). All forms of cognitive interviews involve administering survey questions to a participant and collecting

additional verbal information related to the survey responses. Cognitive interviews can focus on both think-aloud interviewing and probing, and this thesis employed both styles (Willis, 2005). A think-aloud style means that the participant goes through the questions and keeps up a dialogue in which he explains his interpretation of the question and how he arrives at the response. A probing style allows for direct probing of participants' responses to the survey questions, for example in order to elucidate the interpretation of specific terms. Five participants were interviewed for each platform. These participants were chosen by convenience sampling and by virtue of being avid users of the platforms, with an added preference for users who spent a lot of time online. Some of the participants were friends or colleagues of the author, while others were recruited through websites dedicated to online gaming or online gambling; the same websites were later used for data collection (see Appendix I for a list of websites). Participants were interviewed by Skype and were taken through the questions one by one, following a think-aloud and probing procedure as described above.

A number of issues were highlighted in the cognitive interviews, mostly related to the wording of particular items. As an example, one participant who was not a native speaker reported being uncertain of the meaning of three questions in the social anxiety scale that asked about feelings related to "mixing" with other people. However, to change the wording of validated scales is problematic and a decision was made to keep the wording despite a lack of clarity. Importantly, a large number of respondents reported that the questions from Young's diagnostic questionnaire (see Table 2.1 p. 54) seemed strange or did not make sense to them. The respondents could not understand why, for example, being preoccupied with online gaming would be indicative of an addiction. They reported that

95

preoccupation is a necessity if playing games or gambling is a serious hobby, and therefore the question (Item 1, Table 2.1, p. 54) could also indicate high engagement rather than addiction (e.g., Charlton & Danforth, 2007). For this reason, a scale that focused on a more objective set of problematic outcomes was adopted to constitute the dependent variable in this study. This will be further discussed in a later section.

Since the survey was aimed at users of three different platforms, this required three questionnaires with slight differences in the wording of the items. The name of the platform or activity was changed, while keeping the essence of the question intact. For example, "Do you **use Facebook** to keep in touch with friends?" was changed to "Do you **play World of Warcraft** to keep in touch with friends?" For this survey, a five-point Likert scale with response options of Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, and Strongly Agree was used throughout. Some questions were not applicable to all platforms and therefore the total number of platform-related questions varied amongst the three questionnaires comprising the survey. For example, "QFPT5.0: I sometimes find myself randomly browsing photos/profiles with no real interest" was only relevant for Facebook users, while "QWTEST4: I sometimes stay on my character without doing anything else than jumping around or running in circles" was only relevant for World of Warcraft players.

The World of Warcraft questionnaire consisted of 53 uses and gratifications items and 26 psychological assessment items, totalling 79 items. The Facebook questionnaire consisted of 48 uses and gratifications items and 26 psychological assessment items, totalling 74 items. The online poker questionnaire consisted of 51 uses and gratifications items and 26 psychological assessment items, totalling 77 items. Questions about age, gender and country

were asked at the beginning of the survey, irrespective of the platform. See Appendix II for the three questionnaires. Users were directed to the appropriate questionnaire by selecting a platform at the third step of the survey (see flow diagram in Figure 4.1, below).

Following from the cognitive interviews and the final selection of items, a web-based survey was constructed with the help of the survey software Qualtrics. For this survey, items relating to the use of the online platform were displayed first, followed by items asking about psychosocial well-being. The platform-related items were grouped into three blocks: general questions about motivations for using the platform; questions about problematic outcomes, and finally questions about positive outcomes.[15] The block of questions about motivations always appeared first; it was not desirable to begin with questions about problematic outcomes because this could cause offense or distress and make respondents reluctant to continue. Questions about problematic outcomes were then displayed, followed by questions about positive outcomes. The display order of individual items within each block was randomized to eliminate ordering bias as far as possible. Once the survey was constructed, Qualtrics provided a persistent web address that could be distributed and accessed through any regular web browser. The flow of the questionnaire is shown in the diagram presented in Figure 4.1.[16]

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[15]Positive outcomes were not considered for analysis, as originally intended, since this was eventually determined to fall outside the scope of the thesis.
[16] For questionnaire, see appendix D. For operationalization of concepts, see section 4.5 in this chapter.

Figure 4.1: *Flow diagram of questionnaire*

Demographics	Questions about gender and age

$\downarrow$

Platform	Participants were asked which platform they would like to respond to questions about: • World of Warcraft • Facebook • Online poker **This step directed respondents to the appropriate questionnaire for the next two blocks of questions.**

$\downarrow$

Motivations for use	Questions from the uses and gratifications framework about motivations for use. Items intended to measure: • Escapism motivations • Achievement motivations • Social motivations

$\downarrow$

Problematic outcomes	Questions about problematic outcomes of internet use

$\downarrow$

Positive outcomes	Questions about positive outcomes of internet use

$\downarrow$

Psychosocial well-being	Questions intended to measure psychosocial well-being. Items intended to measure: • Stress • Loneliness • Social anxiety • Satisfaction with life • Self-esteem

Finally, Qualtrics was made to force a response for every item in order to ensure that no item would be intentionally or accidentally left blank. This may partly explain the large dropout rate; out of 2,347 surveys started, as many as 40% of respondents did not complete the survey. However, a closer look at the survey completion statistics revealed that a majority of drop-outs occurred once the section assessing psychosocial well-being appeared. This may indicate that people either lost interest when the questions were no longer related to the platform they were interested in, or that they did not wish to disclose such personal information.

Ethical consideration was also given to the data collection process. The cornerstones of research ethics are basic rights to informed consent, anonymity, privacy and the protection of confidentiality. As researchers increasingly undertake online rather than offline research, a new set of dilemmas are introduced regarding how to ensure respect for these basic rights (Markham & Buchanan, 2012). Since this thesis used online surveys for data collection, the interaction with human subjects was kept to a minimum. Informed consent was requested before the respondent proceeded to the survey, and it was stated that respondents under the age of 13 could not participate in the study without parental consent.[17] Anonymity and privacy were guaranteed as no personal information other than age and sex was asked for, and the survey software did not record IP addresses for identification. Attempts to identify respondents would have served no purpose for this project.

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[17] Four people sent me an email and asked if they may participate without parental consent, despite being under 13 years of age! These respondents were suggested to ask for parental consent instead of proceeding immediately with the survey.

Since this thesis is concerned with problematic behaviours and personal problems, it is possible that some respondents could be considered to belong to a vulnerable group. Ethically, this presents the researcher with further challenges in ensuring the well-being of such individuals (Flaskerud & Winslow, 1998). According to Connolly (2003), one way to further ensure participants' well-being is to clarify with them that they have the right to withdraw from the research, temporarily or permanently, at any time without the need to provide a reason. It should also be made clear to what extent they may retrospectively withdraw any consent previously given. This is in accordance with the ESRC's (2010) framework for research ethics, which states that for vulnerable groups every effort should be made to secure the active giving of informed consent. This was done at the beginning of the survey, where informed consent was requested and participants made aware of their rights to withdraw from the research at any time.

4.3 Administration

Over a period of six months, players of World of Warcraft and online poker were contacted via online forums and websites dedicated to these activities (see Appendix I for a list of the forums). To respect the integrity of the forums and their administrators and users, each site's Terms and Conditions were followed. Permission for creating a thread for the survey was sought whenever the Terms and Conditions explicitly stated that this was required, and when nothing was stated at all. Some forums explicitly stated that surveys were acceptable, while others directed such posts to specific areas of the forums; for these forums no permission was sought. Because there are no sites dedicated to Facebook users, except Facebook itself, respondents were recruited on Facebook by utilizing a chain referral technique. Friends and colleagues of the author were asked to display a short status

message encouraging their Facebook Friends to participate in the survey and to share it amongst their own Friends.

4.4 Sampling: A Two-sample Approach to Analysis

After survey administration, data collection and data cleaning, the samples for each platform consisted of 702 World of Warcraft players, 513 online poker players and 348 Facebook users. The demographics for each sample is presented in Table 4.1.

Table 4.1: *Full sample: age and gender*

Platforms	Mean age (SD)	N Male (%)	N Female (%)
World of Warcraft	24 (6.7)	619 (88.2%)	83 (11.8%)
Facebook	28 (9.7)	238 (67.8%)	112 (32.2%)
Online poker	31 (10.4)	494 (96.1%)	20 (3.9%)

Bases: World of Warcraft, N=702. Facebook, N=348. Online poker, N=513.

The samples for the three platforms were relatively similar in terms of average age, with World of Warcraft players being the youngest group and online poker players the oldest. All samples had more male than female respondents. This gender difference was most visible in the online poker and World of Warcraft samples, which had been expected from studies of the demographics of these platforms and which corresponds to the assumed population parameters (e.g., Gainsbury et al., 2012; McBride & Derevensky, 2009; Wood & Williams, 2011; Williams et al., 2008; Durkin & Barber, 2002). The Facebook sample had a more even gender distribution, which was also as expected and which also corresponds to the assumed population parameters (e.g., Subrahmanyam et al., 2008).

It is important to remember that the study of problematic outcomes of internet use is primarily concerned with the users who experience high levels of problematic outcomes. These are the users who are referred to as addicted or as problem users. We should not expect that scores of problematic outcomes, when assessed, will be normally distributed; we may expect that more people will receive low rather than high scores on such a measure. To the author's knowledge this point has never been raised in the literature on internet addiction, despite its potential relevance, although it has been raised with regard to other psychological issues such as loneliness (Russell, 1996). The distributional shape of the problematic outcomes score for all three platforms was examined to determine the extent to which the assumption of normality was met. Results in Table 4.2 show that the assumption of normality was not met for any of the samples in regards to the problematic outcomes score.

Table 4.2: *Test of distributional assumptions for the problematic outcome score*

Platforms	Skewness (SE)	Kurtosis (SE)	Shapiro-Wilk
World of Warcraft	.132 (.092)	-.455 (.184)	.986, df=702, p<.001
Facebook	.977 (.131)	.275 (.261)	.836, df=348, p<.001
Online poker	.195 (.108)	-.332 (.215)	.985, df=513, p<.001

Bases: World of Warcraft, N=702. Facebook, N=348. Online poker, N=513.

The positive skew of the problematic outcome score shows that some people have extreme scores above the mean that are atypical of the majority of scores. According to Russell (1996), this can be expected when inquiring about life problems. However, Russell writes, it is important to consider how this lack of normal distribution may affect the results of statistical tests. Studies that do not account for this risk using samples that are not representative of the intended population, since problem users may not be adequately

represented in samples where a majority of respondents are non-problem users. This would question the generalizability of findings with regard to problem users, and, more importantly, statistical tests might not capture processes and relationships that were vital in explaining problematic use simply because there were not enough problem users in the sample.

This raises the question of whether a different set of variables may explain problematic outcomes in the high-problem sample, as compared with the full sample. Therefore, analysis in this thesis was performed both on the full sample and on a high-problem sample. Any differences found between the samples would provide important information on how the average user and the high-problem user differed with regard to the predictors of problematic outcomes. This is important because it allows us to say something about why some people experience more problematic outcomes than others. It also raises an important methodological point that has so far been neglected in the study of problematic outcomes of internet use, but that could have implications for how we need to approach statistical analysis and sampling in studies where only part of the sample can be assumed to exhibit the characteristics we wish to measure. This thesis therefore advocates an approach where the full sample is compared with a sample that contains only those who have high levels of problematic outcomes, on the assumption that individuals in the high-problem sample will have a different set of variables underlying problematic use from the full sample.

The first sample to be examined was the full sample, consisting of all respondents for each platform, as reported above (see Table 4.1), while the second sample was acquired by selecting all users who had a higher problematic outcomes score than the mean. General

demographics for the sample with high levels of problematic outcomes are presented for

each platform in Table 4.3.

Table 4.3: *High-problem sample: age and gender*

Platforms	Mean age (SD)	N Male (%)	N Female (%)
World of Warcraft	23 (5.7)	349 (91.3%)	33 (8.7%)
Facebook	27 (9.0)	57 (62.0%)	35 (38.0%)
Online poker	30 (9.3)	258 (97.0%)	8 (3.0%)

Bases: World of Warcraft, N=382. Facebook, N=92. Online poker, N=266.

The demographic characteristics of the full sample and the high-problem sample were fairly

similar. Age differed by plus or minus one year, and males had a stronger representation in

the World of Warcraft and online poker samples, but gender was more evenly distributed in

the Facebook sample, as expected according to the literature.

An independent samples t-test was conducted to compare mean values for problematic

outcomes in the full sample and the high-problem sample for all platforms. This was done to

justify the division of the samples at the cut-off point decided upon, since a lack of significant

differences in problematic outcome scores would suggest that such a division was not

meaningful and that analysis could be carried out on the full sample only.

For the World of Warcraft samples, there was a significant difference in mean values

between the full sample (M=2.62, SD=0.85) and the high-problem sample (M=3.26,

SD=0.53); $t(1081)=13.22$, $p<.001$.

For the Facebook samples, there was a significant difference in mean values between the full sample (M=1.47, SD=0.53) and the high-problem sample (M=2.25, SD=0.30); t(438)=13.2, p<.001.

For the online poker samples, there was a significant difference in mean values between the full sample (M=2.57, SD=0.83) and the high-problem sample (M=3.23, SD=0.52); t(779)=11.62, p<.001 .

The independent samples t-test showed that the two samples had a different mean value for problematic outcomes, across all three platforms. Analyzing both samples thus enables an examination of whether the higher degree of problematic outcomes experienced by the high-problem sample can be explained by predictors that might not be significant in the full sample.

However, such a division of the full sample was not unproblematic. First of all, the Facebook sample was already quite small (N=348) and had a low average mean value for problematic outcomes. When selecting those respondents who experienced more problematic outcomes than the mean the final sample size was N=92, which is too small to be used for multilevel modelling. Furthermore, considering the low mean value for problematic outcomes in the Facebook sample, it is questionable whether the sampling process adequately captured the intended population of high-problem users. Analysis performed with the high-problem sample as a base yielded regression models that explained almost no variance in problematic outcomes, as no predictors were significant; this may have been because the problematic outcomes score in the Facebook sample had such a strong positive skew and thus low

variance. Furthermore, a path model for the high-problem Facebook sample was a poor fit to the data and the sample size was inadequate for use in multilevel modeling. Because of these issues, only the full sample of respondents was considered for analysis in the Facebook chapter, which was an unintended consequence of the sampling approach.

Additionally, the division of samples raises questions about appropriate cut-off points which have been debated in studies of problematic outcomes of internet use (e.g., Beard & Wolf, 2001). In the present study, high levels of problematic outcomes can essentially be translated as a higher level of problematic outcomes than the mean. While the full sample and the high-problem sample had significant differences in mean values, it is still debatable whether experiencing, for example, three rather than two problematic outcomes adequately distinguishes an individual as a high-problem user. However, the assumption was that these two samples would be different enough with respect to the processes behind problematic outcomes for meaningful results to be obtained. This is also a methodological exercise where the exact cut-off point matters less than the properties of the sample. It is not the intention of this thesis to determine what is or is not problematic, or to recommend appropriate cut-off points, but to illustrate that the group of respondents who report experiencing more problematic outcomes is different from those who report experiencing fewer problematic outcomes, and that these differences are measurable and can be illustrated by the methods employed in this thesis.

4.5 Measures

In this section the construction of scales is discussed, together with a justification of the methodological choices. This section first describes the rationale for using factor analyses in

the construction of scales. It then presents the measures used in this thesis and the results of the factor analyses as applied to these measures.

4.5.1 Factor Analyses in Scale Construction

Hierarchical factor analyses using maximum likelihood extraction and Varimax rotation were used to identify the latent constructs that were, in accordance with theory (e.g., Yee, 2006, Katz et al. 1973), assumed to underlie the variables measured. Maximum likelihood extraction was chosen as it tends to produce more generalizable and reproducible results (Costello & Osborne, 2005, p. 6). If a variable had a factor loading of >.30 on a given factor it was considered as contributing significantly to that factor (Garson, 2010). Varimax rotation was preferred over oblique rotation methods in order to create a simple-structure output which made it easier for the researcher to identify a variable with a single factor (Costello & Osborne, 2005). While the assumption that the factors may be correlated was plausible given the underlying theory, which would call for an oblique rotation method, a more important assumption for this project was that several of the uses and gratifications variables might be suitable indicators for two or more *different* factors. According to Garson (2010), this specific assumption calls for an orthogonal rotation method such as Varimax.

4.5.2 Psychosocial Well-being

The survey measured self-reported levels of five measures of psychosocial well-being. These were: social anxiety, satisfaction with life, self-esteem, stress and loneliness. The concepts each come with a large body of literature based on decades of research. Each concept will be briefly presented here and its operationalization discussed. The empirical chapters will further review each concept in relation to a particular platform. As illustrated in Figure 3.2

(Chapter 3, p. 75), these variables are used as dependent variables in the regression models when responding to H1, as moderator variables when responding to H3, and dependent variables when responding to H4.

Stress

Perceived stress can be defined as a situation appraised as threatening or otherwise demanding and where insufficient resources are available to cope with the situation (Cohen, Kamarck & Mermelstein (1983). This thesis uses a measurement of perceived stress, based on the work of Cohen et al. (1983), which has been used frequently in studies of stress and coping (Wills, 1986). The scale focuses on the perceived feeling of control over life events and is grounded in the assumption amongst health researchers that the impact of stressful events is, to some degree, determined by one's perception of their stressfulness (Lazarus, 1966). By comparison, a perspective that focuses only on objective measures of stress implies that it is the events themselves that are the causes of illness and pathology, which neglects the importance of individual agency and contextual factors (Cohen et al., 1983). Indeed, the advantage of the subjective perspective on stress adopted in this thesis is that it takes into account how people actively interact with their environment and appraises potentially threatening events in light of available coping resources (Lazarus, 1966). From this perspective, stressful feelings are assumed to occur only when the situation is appraised as threatening and also insufficient resources are available to cope with the situation. In other words, "the stress response is not based solely on the intensity or any other inherent quality of the event, but rather depends on personal and contextual factors as well" (Cohen et al., 1983, p. 386). Due to limited survey space, a validated four-item scale for perceived stress was used in this thesis (Cohen & Williamson, 1988). While this brief scale has

demonstrated a moderate loss of reliability, its factor structure and predictive validity were good and the authors determined that the four-item scale is appropriate for use in situations that require a brief measure of perceived stress (Cohen & Williamson, 1988, p. 61).

Loneliness

It is notoriously difficult to measure loneliness objectively since it cannot be readily manipulated by researchers, which has caused problems in empirical research. This is one reason why developments of measurement instruments have focused on a subjective measurement of loneliness that captures variations in loneliness that occur in everyday life rather than attempting to measure it objectively (Russell, Peplau & Cutrona, 1980). Most research on loneliness has been based on the UCLA Loneliness Scale (Russell et al., 1980; Russell, Peplau & Ferguson, 1978), which has come to be viewed as the standard scale in this area (Russell, 1996). This thesis also adopted the UCLA Loneliness Scale because it is widely used in research on problematic outcomes of internet use (e.g., Caplan, 2003; Caplan et al., 2009; Lemmens et al., 2011). Loneliness is therefore defined in this thesis as a state where social relationships are "too few" and people feel subjectively lonely (Russell et al. 1980, p. 472). Due to limited survey space, the five items with highest factor loadings, according to Russell (1996), were used to form the measurement of loneliness.

Social anxiety

Social phobia encompasses a wide range of issues pertaining to a generalized fear of social interaction, but also specific fears of scrutiny (APA, 1980). This thesis focuses on fear of social interaction, since it has been argued in the literature that such fears or perceived inadequacies may lead people to prefer online social interaction as a safer way to

communicate (McKenna & Bargh, 2000; McKenna, Green & Gleason, 2002). Furthermore, anxiety in social situations has negative effects on social relationships and general well-being (Watson & Friend, 1969) and may therefore lead to the feelings of distress that this thesis proposes as a catalyst for internet-based coping behaviour. Social anxiety is measured here by Mattick and Clarke's (1989) Social Interaction Anxiety Scale (SIAS), which is a widely used self-report measure of social anxiety (Safren, Turk & Heimberg, 1998) that has been shown to have adequate reliability and good internal consistency (Heimberg et al., 1992). The SIAS focuses specifically on fear of social interactions and distinguishes between this and other forms of social phobia and is therefore an appropriate choice for this study. Due to limited survey space, the four items with highest factor loadings according to Mattick & Clarke (1989) was used to form the measurement of social anxiety.

Satisfaction with life

Research on subjective well-being has reported three distinct components; positive affect, negative affect and life satisfaction (Andrews & Withey, 1976). While the first two refer to emotional experience, the latter is concerned with cognitive-judgmental aspects (Diener et al. 1985). In other words, satisfaction with life can be defined as a "global assessment of a person's quality of life according to his chosen criteria" (Shin & Johnson, 1978, p. 478), or as satisfaction with life as a whole. While a number of scales have been developed, many consist of only one single item (Diener, 1984) while others have been designed to target only specific populations (e.g., Neugarten, Havighurst & Tobin, 1961; Lawton, 1975). Crucially, many of these scales do not tap into the self-judgmental aspects of satisfaction with life, but rather measure other feelings or experiences that may have an impact on satisfaction with life (Diener et al., 1985). Diener et al. (1985) developed a brief, five-item questionnaire to

measure satisfaction with life according to its definition as a global assessment of subjective life satisfaction. This scale had favorable psychometric properties and appeared functional in clinical settings (p. 74). It is important to point out that this assessment centres on the individual's own judgments rather than on criteria imposed externally, for example by a researcher (Diener et al., 1985). The five-item questionnaire was used in this thesis as a measure of satisfaction with life.

Self-esteem

Self-esteem is a well-researched concept that bridges a variety of disciplines and has been the subject of a great number of studies (Rosenberg, Schooler & Schoenbach, 1989). Self-esteem has been correlated with a number of issues, such as delinquency, depression and poor self-evaluation (Rosenberg et al., 1989; Wells & Rankin 1983), but has also been correlated with a number of positive effects, such as increased school grades (Wylie, 1979). This is why self-esteem is often explored on a continuum where low scores indicate low self-esteem and high scores indicate high self-esteem, both of which are important indicators with different impacts. In this study, self-esteem is defined as an evaluation of one's own self-concept, which is heavily dependent on reflected appraisals, social comparisons and self-attributions (Rosenberg et al., 1989). Due to limited survey space, self-esteem is measured by six items from Rosenberg's (1965) self-esteem scale.

Scale construction: psychosocial well-being

A hierarchical factor analysis on the psychological items, restricted to five factors, was performed on the full samples for World of Warcraft, Facebook and online poker to examine how the proposed model fitted the data for the three platforms. The five-factor solution

explained 56% of total variance in the data and had the same factor structure across all three platforms (see Appendix IV for the factor structures and loadings). All items met the minimum criterion of a primary factor loading higher than 0.3. All items loaded as expected in accordance with theory and the scales averaging scores for the individual items on the scale showed good internal consistency (see Table 4.4).

Table 4.4: *Mean, standard deviation and Cronbach's alpha for measures of psychosocial well-being on each platform*

Factors	World of Warcraft	Facebook	Online poker
Social Anxiety – M (SD) (QSA1-4)	3.04 (1.08) α = .905	2.71 (1.02) α = .896	2.71 (1.06) α = .913
Sat w. life – M (SD) (QSWL 1-5)	3.11 (0.87) α = .840	3.25 (0.86) α = .869	3.14 (0.90) α = .871
Self-esteem – M (SD) (QSE1-6)	3.75 (0.74) α = .840	3.85 (0.66) α = .806	3.91 (0.65) α = .796
Stress – M (SD) (QSTR1-4)	2.53 (0.75) α = .750	2.47 (0.71) α = .758	2.32 (0.80) α = .789
Loneliness – M (SD) (QLON1-5)	2.54 (0.86) α = .849	2.37 (0.79) α = .848	2.38 (0.80) α = .843

Bases: World of Warcraft, N=702. Facebook, N=348. Online poker, N=513.

4.5.3 Motivations for internet use

The survey measured self-reported levels of motivation for internet use, consisting of a combination of items drawn from uses and gratifications theory (Katz, Gurevitch & Haas, 1973) and motivations for playing MMORPGs (Yee, 2006). Additional items were included as they arose in the cognitive interviews if several participants expressed similar motivations for use. Factor analyses were performed for all items on each of the three platforms. Since the questions asked in the survey were based on a combination of items rather than on a pre-existing and validated scale, it was important to establish which of the items loaded on

which factor. The factors expected, on the basis of the literature, as latent variables were escapism motivations, achievement motivations and social motivations. Achievement motivations were not tested in the Facebook sample. As illustrated in Figure 3.2 (Chapter 3, p. 75), these variables are used as dependent variables in the regression models when responding to H2 and H3, and mediating variables when responding to H4.

The factor analyses in this section had two purposes. The first purpose was to distinguish which items loaded on which factors, and whether there were any major discrepancies with the theory. The results obtained also showed which items loaded on the same factor for each of the platforms. This was necessary to later construct motivation-scales that were comparable across platforms, as explained further in section 4.5.4 (p. 124). The second purpose was to obtain the factor loadings for each item, which could then be used to weight the items when constructing the scales. Weighting the items by their factor loadings makes it possible to create scales based on weighted sum scores by multiplying the factor loading of each item to the scaled score for each item before summing (DiStefano, Zhu & Mindrila, 2009). The advantage of using weighted sum scores for analysis is that items with a higher loading are given a larger impact on that factor, which enables the researcher to account, in the construction of scales, for unique differences between platforms. This accounts for the assumed differences between the platforms with regard to the ways in which they accommodate certain motivations. Using weighted sum scores, these differences could be retained while still keeping the scales similar in terms of what items were included. This allowed for cross-platform comparison since the scales were not different in terms of the items, only of the relative importance of each item.

This section first reviews the literature for each proposed factor. It then proceeds to present the results of factor analyses for each platform.

Escapism motivations

Knobloch-Westerwick, Hastall and Rossmann (2009) write that escapism is probably the most popular lay notion when it comes to explaining consumption of seemingly trivial media content (p. 207). Even though escapism is an area of study in its own right, the operationalization of the concept in this study is closer to the lay understanding of escapism as, basically, a way to escape real life and relax for a while. This definition of escapism has been used in uses and gratifications research (e.g., Katz et al., 1973; Katz & Foulkes, 1962) where it is identified as one of the key needs of the population to be satisfied by the mass media (p. 166). In this study escapism can thus been defined as a purposeful behaviour carried out in order to escape from routines or emotional distress (Ruggiero, 2000). Items for escapism were drawn from Yee's (2006) inventory for gaming motivations and uses and gratifications research (Katz et al., 1973; Papacharissi & Rubin, 2000; Flanagin & Metzger, 2001; Sherry et al., 2006). Additional items were included because they arose in the cognitive interviews. All items for the escapism motivation will be presented in the factor analyses below.

Achievement motivations

Achievement as a concept is multifaceted and has been approached from a variety of perspectives. For example, in the gambling literature achievement has been approached simply as a challenge (Lee, Lee, Bernhard & Yoon, 2006), as a way to achieve a higher status in society which seems otherwise unobtainable (Campbell, 1976) and as a way of giving

oneself credit for success perceived as due to skill and to being an expert at gambling (Hayano, 1983; Ricketts & Macaskill, 2003). In the gaming literature, this concept was first described by Bartle (1996), who conceptualized achievers as players who give themselves game-related goals and then set out to achieve them. Typically, achievers aim to rise in levels and power by killing lots of monsters and accumulating treasure or points; this is the main goal and everything they do is ultimately subservient to it:

> Exploration is necessary only to find new sources of treasure, or improved ways of wringing points from it. Socialising is a relaxing method of discovering what other players know about the business of accumulating points […]. Killing is only necessary to eliminate rivals or people who get in the way, or to gain vast amounts of points. (Bartle, 1996, p. 2)

Achievement is conceptualized in this study with a particular focus on the enjoyment of competition and on improving as a player or with one's performance as a particular character. This conceptualization was chosen because it falls between different conceptualizations of achievement from the gambling and gaming literatures. For example, improving as a player by gaining skill and expertise or with one's character are key features of achievement according to several conceptualizations in both fields (Yee, 2006; Bartle, 1996; Hayano, 1983; Ricketts & Macaskill, 2003, 2004). Items for achievement were primarily drawn from Yee's (2006) inventory of gaming motivations and Ricketts and Macaskill's (2003, 2004) qualitative studies of achievement in problem gamblers. Additional items were included as they arose in the cognitive interviews. All achievement items are presented in the factor analyses below.

Social motivations

It is widely argued that one of the more popular reasons for internet use is interpersonal communication (e.g., Kraut et al., 1998; McKenna & Bargh, 2000; boyd, 2014). Indeed, needs related to strengthening contact with family and friends have been reported as one of the key functions of mass-media use (Katz et al., 1973). Social motivations are therefore operationalized in this thesis as a desire to interact socially with others, which is facilitated in various ways by the internet (Flanagin & Metzger, 2001). The measurement of social motivations draws on items from Yee's (2006) inventory for gaming motivations and from uses and gratifications research (e.g., Katz et al., 1973; Papacharissi & Rubin, 2000; Flanagin & Metzger, 2001). Additional items were included as they arose in the cognitive interviews. All items for social motivations will be presented in the factor analyses below.

Factor analysis: Motivations for playing World of Warcraft

A hierarchical factor analysis restricted to three factors was performed to examine whether the proposed three-factor model fitted the data (Table 4.5) for World of Warcraft. The restriction was motivated by a priori assumptions about the underlying motivations for play in World of Warcraft based on existing theory (Yee, 2006).

Table 4.5: *Hierarchical factor analysis on motivation items for World of Warcraft*

Items	Achievement motivations	Escapism motivations	Social motivations
QWA4: It is important for me to be well-known in the game.	.546		
QWA3: I strive to make my character as powerful as possible.	.529		
QWTEST4: I sometimes stay on my character without doing anything else than jumping around or running in circles.	.477		
QWU6: While playing, I usually communicate with other players through in-game voice-chat or programs like skype/teamspeak/ventrilo.	.464		(.264)
QWA1: I play World of Warcraft because I enjoy competing with other players.	.440		
QWTEST6: If I feel better or worse after playing depends mostly on how well I've done in the game.	.438		
QWTEST3: I sometimes stay logged in on my character even when I'm not doing anything progressive in the game.	.446		
QWPT4: I sometimes keep playing even if I'm not really enjoying myself.	.434	(.321)	
QWA5: I will do boring or very repetitive tasks (such as grinding) if it makes my character more powerful in the end.	.428		
QWTEST1: I enjoy reading about World of Warcraft, configuring my character, or thinking about possible game-situations and strategies.	.350		
QWU3: I often look at other players' characters and examine their gear.	.348		
QWA2: I sometimes purposely try to provoke or irritate other players.	.340		
QWTEST2: I enjoy thinking about or planning my next session.	.320	(.283)	
QWE3: Playing allows me to escape the real world for a while.		.760	
QWE1: Playing helps me avoid thinking about some of my real-life problems or worries.		.743	
QOSW3: I spend more time on World of Warcraft when I feel down.		.575	
QWS2: I feel lonely when I can't log on to World of Warcraft.		.432	
QOSW1: I tend to spend more time online when I have other boring tasks I need to take care of.		.357	
QWU8: I feel like time goes by quickly when I'm on World of Warcraft.		.302	
QWPT2: I play to have something to do when bored.			
QWS4: I enjoy chatting with other players.			.688
QWS1: The people I play with online give me a sense of community.			.523
QWU1: I play World of Warcraft to get to know people with whom I have something in common.			.521
QWU2: I play World of Warcraft to stay in touch with friends.			.461
QWS3: I play to have something to do with others.			.451
QWU5: While playing, I usually communicate with other players through the in-game text chat.			.423
QWTEST5: I sometimes do tasks that don't make my character any more powerful at all, such as helping others for no gain or acquiring funny pets or clothes.			.398
Cronbach's Alpha	.775	.744	.747
Mean (SD)	3.41 (0.56)	3.25 (0.59)	3.79 (0.51)

Base: All participants who play World of Warcraft, N=702.
Note I: Primary factor loadings >0.30 are indicated in the table.
Note II: Cross-loadings >.25 are indicated in parenthesis.

The final factor solution was a three-factor solution that explained 27.5% of the variance in the data. While this was rather low, it could be explained by the large number of total items in the data set that did not load on either of the proposed factors. Notably, many items that arose in the cognitive interviews failed to load on a factor, while most items from Yee's (2006) scales for escapism, achievement and social motivations loaded on the intended factors. This could be because the additional items that were included based on the cognitive interviews were very different from the items in Yee's scales. While these additional items may have indicated, for example, one form of achievement, they may not have been tapping into the achievement construct as defined by Yee and therefore ended up not loading on that particular factor. The three factors that emerged corresponded well to the proposed factors and each factor showed good internal consistency. The means and alpha values for the scales as shown in Table 4.5 were derived by computing the averages across the items with loadings greater than .30.[18]

Factor analysis: Motivations for using Facebook

A hierarchical factor analysis restricted to two factors was performed to examine whether the proposed two factor model fit the Facebook data. However, a two factor model saw a large number of items dropped because their factor loadings did not meet the criteria of being >.30. A three-factor model was tested that corresponded better to the data. The factor structure and item loadings from the three-factor analysis are summarized in Table 4.6.

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[18] Negative loadings greater than .30 were included in the scale and reversed.

Table 4.6: *Hierarchical factor analysis on motivation items for the Facebook sample*

Items	Social motivations	Escapism motivations	Chatting motivations
QFU7: I feel like time goes by quickly when I'm on Facebook.	.652		
QFE2: I log on to Facebook to relax for a while.	.646		
QFE3: Using Facebook allows me to escape the real world for a while.	.483	(.406)	
QFU4: I upload photos to Facebook to show my friends what I'm doing.	.480		
QFS3: I spend time on Facebook to have something to do with others.	.455		
QFS1: The people I talk to on Facebook give me a sense of community.	.449		
QFE1: Using Facebook helps me avoid thinking about some of my reallife problems or worries.	.441	(.418)	
QFS2: I feel lonely when I can't log on to Facebook.	.432	(.399)	
QFPT1: I log on to Facebook to be entertained.	.408		
QFU1: I use Facebook to get to know people with whom I have something in common.	.388		
QFU3: I write new Facebook status updates to show others how I'm feeling or what I'm doing during my day.	.359		
QFPT5: I sometimes keep checking Facebook even though I'm not really enjoying it.		.744	
QFPT5.0: I sometimes find myself randomly browsing photos/profiles with no real interest.		.674	
QFPT2: I log on to Facebook to have something to do when bored.		.500	
QFU6: I use Facebook to browse photos of others and to look at their profiles.		.478	
QOSF3: I spend more time on Facebook when I feel down.	(.400)	.443	
QOSF1: I tend to spend more time online when I have other boring tasks I need to take care of.		.433	
QFU8: If I have new emails, notifications of interesting comments in my newsfeed, I feel happier after using Facebook.		.408	
QFU9: If I have no new updates or interesting comments in my newsfeed, I feel down or disappointed after using Facebook.		.399	
QFS4: I enjoy chatting with other people on Facebook.			.784
QFU5: I usually chat in real-time with people on Facebook.			.718
QFPT3: I sometimes stay logged on to Facebook even when I'm not really doing anything actively on it.			.332
QFU2: I use Facebook to stay in touch with friends.			.322
Cronbach's Alpha	.819	.820	.615
Mean (SD)	2.52 (0.59)	2.77 (0.63)	3.38 (0.73)

Base: All participants who use Facebook, N=348.
Note I: Pimary factor loadings >0.30 are indicated in the table.
Note II: Cross-loadings >.25 are indicated in parenthesis.

The final factor solution was a three-factor solution that explained 34% of the variance in the data (Table 4.6). Once again this was rather low, but this can be explained by the restriction to three factors, which saw a large number of items from the cognitive interviews fail to load on the intended factors. One factor was found that consisted of only four items, two with high loadings (>.70) and two with low loadings (>.35). This factor was labeled "chatting motivations", as the two items with the highest factor loadings focused on chatting with other users. However, items from this factor were later incorporated into the scale for social motivations since chatting is a form of social motivation. This also matched the results of factor analyses for the other two platforms. The social and escapism factors had good internal consistency, while the chatting factor had moderate internal consistency. The means and alpha values for the scales, as shown in Table 4.6, were derived by computing the averages across the items with loadings greater than .30.

Factor analysis: Motivations for playing online poker

A hierarchical factor analysis restricted to three factors was performed to examine whether the proposed three-factor model fitted the online poker data. However, a three-factor solution saw all achievement items dropped because the factor loadings did not meet the minimum criteria of >.30. Descriptive analysis of the achievement items showed that all expected achievement items had between 60% and 80% of respondents selecting Agree or Strongly Agree, with mean values ranging from 3.5 to 4.5 on the five-point scale. Achievement had the highest mean value amongst all the motivations for online poker players (M=3.78, SD=0.59). This indicated that achievement was an important motivation for play, but this was not captured by a factor analysis restricted to three factors. Furthermore, an entertainment factor was identified as the third factor, rather than the expected

achievement factor. While this corresponds to previous findings in the gambling literature, where entertainment is considered a key motivation for gambling, it was problematic that the achievement items were dropped since achievement is such a key element of poker. For this reason a four-factor solution was tried. When the restriction was set to four factors all intended achievement items loaded together on a unique factor. For this reason a four-factor solution was considered to fit the data better (Table 4.7) and the results are presented in Table 4.4.

Table 4.7: *Hierarchical factor analysis on motivation items for the online poker sample*

Items	Entertainment motivations	Social motivations	Escapism motivations	Achievement motivations
QPPT1: I play online poker to be entertained.	.756			
QPE2: I play online poker to relax.	.738		-	
QPPT2: I play online poker to have something to do when bored.	.604		(.343)	
QPTEST1: I play online poker as a source of income.	-.569			(.326)
QPU8: I feel like time goes by quickly when I'm playing poker.	.355			
QPU2: I play online poker to stay in touch with friends.		.623		
QPU1: I play online poker to get to know people with whom I have something in common.		.602		
QPS1: The people I play poker with online give me a sense of community.		.571		
QPS4: I enjoy chatting with other players.		.565		
QPS3: I play online poker to have something to do with others.	(.310)	.546		
QPU5: While playing, I usually communicate with other players through the in-game chat.		.532		
QPA4: It is important for me to be well known amongst other players.		.418		
QPU6: While playing, I usually communicate with other players through voice-chat.		.382		
Q321: It is important for me to achieve good rankings on the site I play on.		.357		(.316)
QPE3: Playing online poker allows me to escape the real world for a while.	(.389)		.683	
QPE1: Playing online poker helps me avoid thinking about some of my real-life problems or worries.			.679	
QOSP3: I spend more time on online poker when I feel down.			.505	
QPPT4: I sometimes keep playing even if I'm not really enjoying myself.	(-.349)		.435	
QPS2: I feel lonely when I can't play online poker.			.403	
QOSP1: I tend to spend more time online when I have other boring tasks I need to take care of.			.358	
QPTEST2: If I feel better or worse after playing depends mostly on how well I've done in the game.			.353	
QPPT3: I sometimes stay logged in on the poker site even though I'm not really playing.			.320	
QPA3: It is important for me to improve my poker skills.				.591
QPA5: I will do boring or very repetitive tasks if it makes me a better player in the end, for example playing many low-value hands for practice.				.431
QPA1: I play online poker because I enjoy competing with other players.	(.370)			.406
QPU3: I often look at other players' scores and ratings.				.346
Cronbach's Alpha	.765	.775	.714	.520
Mean (SD)	2.85 (0.65)	2.25 (0.62)	2.75 (0.62)	3.78 (0.58)

Base: All participants who play online poker, N=513.
Note I: Only primary factor loadings >0.30 are indicated in the table.
Note II: Cross-loadings >.30 are indicated in parenthesis.

The four-factor solution explained 34% of the variance in the data. The first three factors all showed good internal consistency. As with the other factor analyses, the amount of explained variance was rather low, but this can again be explained by the restriction to four factors, which saw a large number of items from the cognitive interviews fail to load on the intended factors. Furthermore, the achievement factor had low internal consistency despite all intended achievement items loading together. The means and alpha values for the scales shown in Table 4.7 were derived by computing the averages across the items with loadings over .30.

The entertainment scale, unexpectedly and uniquely to the online poker sample, requires some interpretation because it will be included in regression models for the online poker chapter. The factor consists of nine items, where the highest-loading items are two uses and gratifications items asking about whether online poker is used to relax and as entertainment. There was a high negative loading for the item asking if the user played online poker as a source of income. This supports the factor label, as someone who plays online poker as a source of income does not consider it entertainment but work, which explains the negative loading. Additionally, an intended escapism item asking whether the user sometimes keeps playing even though it is not enjoyable also had a negative loading. This further supports the factor label, as someone who plays for entertainment would not continue playing when it was no longer enjoyable. Two items that cross-loaded on entertainment focus on playing together with others and competing with them; this is plausible as a form of entertainment in the context of online poker. The final cross-loading item asks about whether the user plays to escape the real world for a while. This was an intended escapism item and also had the strongest primary loading of all escapism items, but this item seems to also contribute to

the entertainment factor, perhaps through escape as a precursor to relaxation and entertainment.

4.5.4 Constructing comparative scales

Five motivation factors were interpreted in total, but only two of these were measured on all three platforms. The achievement motivation was only measured for World of Warcraft and online poker. While it is possible that there are elements of Facebook use where achievement would be a strong motivator (such as Facebook games), these questions were not asked because the existing literature has framed the use of Facebook as a purely social activity. This was unfortunate since Facebook games would have been interesting to explore from an achievement perspective, but, as the literature on Facebook games was very limited at the time (and still is), this was not pursued.

Since escapism and social motivations were identified across the three platforms, it was important to create measures that would allow for cross-platform comparison to test H5 (see Chapter 3). This hypothesis assumed that there would be differences between the platforms regarding which variables were associated with problematic outcomes. The measures thus had to be comparable, while still taking the unique aspects of each platform into account, since in practice escapism on Facebook may be different from escapism on World of Warcraft. This approach was justified by research suggesting that it is important to take into account how uses, gratifications and motivations differ depending on the media platform (Sherry et al., 2006), and was accommodated by using weighted sum scores as explained in section 4.5.3. Table 4.8 shows the items that loaded on the same factors in more than one sample. These items were then combined into scales and used for analysis.

This procedure was not followed for achievement, as the items loading on achievement were not similar enough for World of Warcraft and online poker. A large number of items that loaded on the achievement factor for World of Warcraft did not load on the achievement factor for online poker. This may be due to the general difficulty in operationalizing achievement, as discussed earlier, which indicates that achievement may markedly differ depending on the context. For example, many of the items that were expected to load on the achievement factor in the poker sample instead loaded on the escapism factor in that sample. The achievement scales for World of Warcraft and online poker are therefore based on all items with loadings >.30 on the achievement factor in Tables 4.5 and 4.7 above. Since the entertainment scale was only used in analysis of the online poker sample, it was constructed by averaging the weighted sum scores on the items with primary factor loadings on the entertainment factor listed in Table 4.7 above.

Table 4.8: *Final scales used for analysis on each platform*

Items	World of Warcraft			Facebook		Online poker		
	Social motivations	Escapism motivations	Achieve. motivations	Social motivations	Escapism motivations	Social motivations	Escapism motivations	Achieve. motivations
I enjoy chatting with other users.	.685			.784		.565	-	
I use <platform> to get to know people with whom I have something in common.	.532			.388		.602		
The people I <interact with> online give me a sense of community.	.524			.449		.571		
I <use this platform> to stay in touch with friends.	.465			.322		.623		
I <use this platform> to have something to do with others.	.458			.455		.546		
While <using this platform> I usually communicate with other <users> through the in-game text chat.	.417			.718		.532		
<Using this platform> allows me to escape the real world for a while.		.767			(.406)		.683	
<Using this platform> helps me avoid thinking about some of my real-life problems or worries.		.754			(.418)		.679	
I feel lonely when I can't log on to <this platform>.		.414			(.399)		.403	
I spend more time on <this platform> when I feel down.		.550			.443		.505	
I tend to spend more time online when I have other boring tasks I need to take care of.		.344		-	.433		.358	
I sometimes keep <using this platform> even though I'm not really enjoying it.		(.319)		-	.744		.435	

It is important for me to be <well-known in the game / achieve good rankings on the site I play on>.			.546					.316
I strive to <make my character as powerful as possible / improve my skills>.			.529					.591
I play <World of Warcraft / online poker> because I enjoy competing with other players.			.440					.406
I will do boring or very repetitive tasks if it makes <me or my character> <more powerful or a better player> in the end.			.428					.431
I often look at other players <characters / scores> and examine their <gear / ratings>.			.348					.346
I sometimes stay on my character without doing anything else than jumping around or running in circles.			.477					
While playing, I usually communicate with other players through in-game voice-chat or programs like skype/teamspeak/ventrilo.			.464					
Whether I feel better or worse after playing depends mostly on how well I've done in the game.			.438					
I sometimes stay logged in on my character even when I'm not doing anything progressive in the game.			.446					
I sometimes keep playing even if I'm not really enjoying myself.			.434					
I enjoy reading about <the platform>, or thinking about possible game-situations and strategies.			.350					
I sometimes purposefully try to provoke or irritate other players.			.340					
I enjoy thinking about or planning my next session.			.320					
I play online poker as a source of income.								.326
Cronbach's alpha	.743	.734	.776	.664	.734	.666	.682	.520

The final scales used for analysis had adequate internal consistency (Table 4.8). The exception was the scale for achievement motivations for online poker which had a fairly low Cronbach's alpha value. This may indicate possible issues with the operationalization of this concept.

4.5.5 Problematic outcomes of internet use

The final part of the proposed theoretical model concerns problematic outcomes of internet use on the three platforms. This measurement is the dependent variable in all analysis done in this thesis. Problematic outcomes are complicated to operationalize because studies have used inconsistent criteria to measure it (Byun et al., 2009; King et al., 2013; Petry et al., 2014). Some studies have used criteria that parallel those for substance use disorders or pathological gambling (Petry et al., 2014), others have adopted impulse-control disorder criteria (e.g., Shapira et al., 2000). Since this thesis does not consider problematic outcomes of internet use to be a mental disorder, it was not ideal to use, as most studies on the topic have done so far, measurements based on the DSM (Kardefelt-Winther, 2014d). Instead, the important task was to obtain a set of outcomes that most people would consider more or less objectively problematic. Preoccupation, for example, which is included in most measurements for problematic outcomes of internet use (Petry et al., 2014), was not a desirable item to include here because the cognitive interviews suggested that preoccupation may not be problematic for everyone. Rather, preoccupation can also be interpreted as an indication of a healthy interest (Charlton & Danforth, 2007; Kardefelt-Winther 2014d, 2014e).

Problematic outcomes of internet use across the three platforms are operationalized through the following statements: [19]

(1) I sometimes lose sleep because of the time I spend on <the platform>

(2) I sometimes skip meals or delay my eating because I am busy <the platform>

(3) I have had conflicts with my partner or parents over the time I spend on <the platform>

(4) I have lost contact with some friends because I rather spend time on <the platform>

(5) My school/job performance has suffered because of the time I spend on <the platform>

These five measures were chosen because they represent outcomes that are potentially problematic if taken too far. They have all been used extensively in previous studies of problematic outcomes of internet use (e.g., Caplan, 2002, 2005; Griffiths, 2000; Meerkerk, 2009; Morahan-Martin & Schumacher, 2000; Widyanto & McMurran, 2004; Young, 1998). It needs to be mentioned here that this operationalization taps into time spent online as a precursor of problematic outcomes. While this has been a point of criticism for instruments like Young's IAT, where a large amount of time spent online is assumed to indicate a mental disorder, it is not necessarily an issue when problematic use is framed as the result of a coping behaviour. The difference is that the combined framework used in this thesis considers time spent online as purposeful and goal-oriented behaviour. Problematic outcomes, then, are a natural, though problematic, consequence of the fact that coping through internet use is a time-consuming process that leaves less time for other important activities, for example the activities listed above. Crucially, this is an active choice that the

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[19] In the survey, <the platform> was replaced with World of Warcraft, online poker or Facebook.

individual makes. Young's IAT and an addiction framework, by comparison, draw a parallel between time spent online and addiction, which suggests that the problematic outcomes of internet use result because a person cannot control their internet use due to a mental illness. Such nuances in interpretation are important in a society where internet use is a common way to spend time.

A hierarchical factor analysis was performed on the five items intended to capture problematic outcomes of internet use for the World of Warcraft, Facebook and online poker samples. The factor analyses yielded the same factor structure across all three platforms, with all items loading as intended (see Appendix V for factor loadings). Table 4.9 below shows the mean, standard deviation, explained variance and Cronbach's alpha value for each scale for problematic outcomes on the three platforms.

Table 4.9: *Mean, standard deviation and Cronbach's alpha for problematic outcomes by platform*

Platform	World of Warcraft	Facebook	Online poker
Explained variance:	R^2: 41%	R^2: 45%	R^2: 38%
Problematic outcomes M (SD) Cronbach's alpha	2.62 (0.85) $\alpha = .717$	1.47 (0.53) $\alpha = .748$	2.57 (0.84) $\alpha = .685$

Bases: World of Warcraft, N=702. Facebook, N=348. Online poker, N=513.

The scale for problematic outcomes showed good internal consistency across all platforms and explained adequate amounts of variance in problematic outcomes. The dependent variable was derived by computing the average across the five items measuring problematic outcomes.

4.6 Statistical Techniques

To analyse the survey data and compare the different groups, two multivariate statistical techniques were applied: linear regression and path analysis.

Linear regression allows for the studying of the effect of certain variables on an outcome variable, while controlling for the influence of other variables. It also allows for the investigation of moderation effects where the relationship between a predictor and the outcome variable depends on the level of a third variable. This is measured through interaction effects which are constructed as the product of two predictor variables. Wills (1986) defines coping processes as buffer interactions and argues that an analysis of coping behaviours can be carried out by examining the interaction between the stressor and the coping behaviour. If a coping process partly explains the outcome, then the interaction should be most strongly related to the outcome at a higher level of the stressor and less related (or unrelated) to outcomes at lower levels of the stressor. This analytical perspective is used to understand whether problematic outcomes of internet use can be conceived of as a coping behaviour and will be explored by fitting a number of interaction effects in multiple regression models. Multiple linear regressions will be used to respond to hypotheses H1, H2, and H3 (Chapter 3, p. 74).

This thesis also focuses on processes, and not exclusively on relationships between variables or interaction effects. Path modelling can be used to test the fit of an implied causal model against the data and can be used to assess direct and indirect causal paths from the predictor variables to the response variable (Kline, 2005). The construction of a path model draws on the theoretical framework to specify the temporal order of the variables and

131

establish their assumed causal links. This method makes it possible to analyse the relationships between variables while also controlling for relationships between other variables. Path modelling thus allows for the testing of theorized causal models, such as the one specified in Figure 3.1 in Chapter 3, and can be used to analyse the extent to which the proposed causal model explains problematic outcomes of internet use. It is also used to understand whether additive effects are taking place in the relationship between predictor variables. Such additive effects may, for example, amplify the problematic effects of low psychosocial well-being via their influence on motivations for use. Although cross-sectional data as gathered in the survey cannot be used to determine true causality, it is possible to test, through path modelling, whether the causal assumptions underlying the framework fit the collected data (Kline, 2005). Path modelling will be used to respond to hypothesis H4 (Chapter 3, p. 74).

4.7 Conclusion and Reflections

The aim of this chapter was to give an overview of the ways in which the concepts proposed in Chapter 3 were operationalized, to show how data was collected and to explain how the scales used for analysis were constructed.

There were a number of challenges involved in creating measures that would be applicable on three different online platforms. One way to work around this challenge would have been to create different scales for each of the platforms guided only by the results from the factor analysis and a high measure of internal consistency. However, this thesis aims to say something about these motivations generally in regard to how they may be indicators of a coping process for life problems and how this is can be more or less (or not at all) facilitated

by certain platforms. Each platform may particular affordances that can facilitate such coping processes and these should not be overlooked. Even though the items asked in this survey did not focus on affordances, presumably these are reflected in the ways in which individual's use the platforms; for example, it is unlikely that World of Warcraft would be used for information seeking. This presents a problem when the goal is to create scales that can be compared across platforms. For this reason it seemed a good option to use the same items to operationalize each motivation and account for the platform's unique differences by using weighted sum scores. This weights each item according to its relative importance in indicating, for example, escapism on a particular platform. However, this procedure may have led to some issues in scale construction, such as a low measure of internal consistency for the scale operationalizing achievement motivations in online poker. It also led to a number of items being dropped from a scale, even though they had adequate factor loadings for that scale, just to make the concepts comparable. It may have been more practical to use validated scales for achievement that were different across the platforms and instead draw conclusions on a platform level only. However, it seemed important for the purpose of this project to also be able to say something about, for example, whether escapism as a general motivation is associated with problematic use on multiple platforms, or to compare if the interaction between stress and escapism led to similar consequences for users of all three platforms or not. For these reasons the decision was to focus on constructing comparative scales rather than scales that may have been somewhat more robust.

The second challenge in scale construction was that many items did not load on the intended factors. Related to this issue was the problem that the amount of explained total

variance by the discovered factors was fairly low across all samples. The low amount of explained variance may be a consequence of including many items that were not part of validated scales and therefore had relatively low communalities with the other items (Beavers et al., 2013). This is reflected by the low factor loadings for a number of items for each factor and by the fact that a number of items were dropped. However, low variance is not necessarily a problem because social science research, as compared for example with studies of genetics, is often concerned with behaviour that is explained by a large amount of different factors that cannot be included in one analysis or in a few scales. The most important point for the factor analyses computed here was to derive interpretable and useful factor structures that could later be reduced to scales with acceptable internal consistency.

Finally, it is worth mentioning here that online data collection on forums presents some particular challenges for researchers. When recruiting respondents on online forums it is not unusual for a survey to be competing for attention with many other surveys. In fact, during the data collection I came across numerous surveys by academic researchers who later published their findings in peer-reviewed journals. At the same time, many people also put up online surveys for undergraduate theses or for marketing purposes. The challenge therefore is to make your survey more interesting than the other surveys without revealing too much information which may bias the respondents. Framing your survey as a survey on gaming addiction and posting it on a gaming forum, I found out, was not a popular approach. Rather than acquiring respondents, I was met with criticism and accusations of being a moral panics instigator. I ran into a similar problem on the online poker forums when I framed my survey as a study of gambling. Many players were quick to remark that poker was not a

gambling activity. Gambling indicates a game of chance, whereas poker is a game of skill. Unknowingly I had stepped right into a centuries-old philosophical debate (e.g., Hayano, 1983). Due to this feedback I was later able to correct the framing of my survey and approach gamers and gamblers in a more appropriate manner.

It also needs to be acknowledged here that I found it easier to engage with World of Warcraft players than with online poker players due to my own extensive experience with World of Warcraft. Creating interesting discussions in the forum threads, I found, was an efficient way to gather a large number of respondents. This was notably difficult to do on the poker forums because my knowledge of poker is limited and mostly theoretical, and this may explain why the samples differ in size even though I only spent two weeks collecting World of Warcraft data and several months on the poker sample.

That the Facebook sample is the smallest sample may seem surprising, as one might think that the huge amount of people who use Facebook should make it easy to gather respondents. However, gathering respondents on Facebook was far more difficult than on the other two platforms. I spent more than twice the amount of time gathering responses from Facebook users than from online poker players and still did not reach enough respondents to adequately perform all the statistical analyses I had hoped for. I can only speculate as to why this was the case, but it may be that people who use Facebook have other things to do while online. World of Warcraft and online poker players, by comparison, have considerable down time while playing, as they wait for events to start, which leaves plenty of time to visit forums and participate in surveys. Furthermore, World of Warcraft players and online poker players are part of clearly defined communities that can be

accessed through certain websites, while Facebook users (almost) represent the general population. Therefore, general population sampling methods may have been more effective.

Furthermore, the Facebook sample had low mean values for problematic outcomes of use. One of the proposed advantages of chain referral sampling was that hard-to-reach respondents -- in this study individuals with high levels of problematic outcomes -- would be more easily reached through this technique. It seems unlikely that the chain referral sampling was effective in this regard since the sample had low average problematic outcomes scores compared with the other samples (e.g., Wood et al., 2004; Baltar & Brunet, 2012). However, this could also be a consequence of the sampling bias incurred by using a convenience sample to initiate the chain referral (e.g., Magnani, 2005).

In Chapters 5 to 7 the data from the survey are used to model the proposed underlying processes of problematic internet use. Chapter 5 focuses on the example of World of Warcraft as representing problematic outcomes of online gaming. Chapter 6 focuses on Facebook and problematic outcomes of using social networking sites. Chapter 7 focuses on online poker and problematic outcomes of online gambling. Hypotheses H1 to H4, as described in Chapter 3, were tested for each of the platforms. In Chapter 8 the results are compared across the platforms and general conclusions are drawn about how well the proposed model explained problematic outcomes on the different platforms. Platform-specific findings are discussed in the conclusions of each respective empirical chapter, while general tendencies and processes that apply across all platforms, if any, will be discussed in Chapter 8.

5. Exploring Processes of Coping in the Context of Online Gaming

You can say I'm a fanatic, or even addicted; say my habits are bad, my silly life is conflicted. But if it makes me happy, why should I quit this? The world brings me down -- WoW makes me uplifted.

- Jace Hall, *I Play WoW*, 2010

In 2010, television and video games producer Jason "Jace" Hall made a splash in the WoW community with his music video I Play WoW, in which he raps about the life of a World of Warcraft player. By August 2014, the video had gathered over 14 million hits on YouTube. The lyrics capture some of the stigma that players of World of Warcraft face, including often in the media and, unfortunately, in the discourse of academic researchers. In an interview I carried out with Jace Hall for this thesis, he told me:

> I felt the gaming world needed a track that they could rally around and empower them as champions. Naturally, World of Warcraft became the perfect backdrop as it was the most popular game of the decade, and it had a fan base that for the most part was used to being ostracized for participating in an activity they should mostly keep to themselves. I Play WoW was both familiar and freeing in this regard …. (J. Hall, personal communication, July 30 2013)

There is plenty of debate around online gaming as a potentially harmful activity, both amongst researchers and in the media. The most extreme examples of this debate are found in the Chinese media; Szablewicz (2010) provides an account of how online gaming is represented in China as a modern-day "opium for the spirit", where excessive use leads to

government-sanctioned shock therapy and forced treatment with psychotropic drugs. While debates in the Western world have become more nuanced in recent years, the current state of internet addiction research and its often one-sided representation in the media may fuel a negative discourse around gaming. As Jace Hall noted, "it's unfortunate that gaming has not garnered the same respect as film or music, although the audiences and economies of the industries are very comparable. There is still a large disconnect between the gaming world and the mass media...." (personal communication, July 30 2013)

One consequence of such a disconnect between the gaming world and the mass media are reports of the former's inherent potential for causing harm, often delivered in the language of addiction and compulsion. While this particular framing is not uncommon for new media (Drotner & Livingstone, 2008), the addiction discourse suggests that gaming may be a source of problems, but that there is a quick fix available by turning off the computer or regulating game play. This idea is reminiscent of an addictive disease framework and of research on alcohol and drug addiction that has advocated complete abstinence as the only possible outcome (Shaffer, 1986). However, as I discussed earlier, there is plenty of evidence suggesting that complete abstinence is not the only outcome possible and that in some cases this mode of treatment may even have worse outcomes than controlled use (e.g., Sobell & Sobell, 1973, 1976; Davies, 1962; Shaffer, 1986; Shaffer & Robbins, 1991). Furthermore, there is little evidence to suggest that the same treatment should be applied to internet use or gaming (Shaffer et al., 2000; Wood, 2008), or even that the addictive disease model is valid in its conception (Shaffer, 1986; Brown 1993). While an abstinence approach may in practice prevent excessive use through restrictive measures, for gaming as well as for substance use, it sidesteps the question of why the person is playing excessively.

138

In this respect the discourse resembles that of modern medicine, which Conrad (2007) has criticized for its symptomatic focus on and adherence to medication as a quick fix to circumvent, rather than understand, mental illnesses.

In this chapter I want to challenge the framework of addiction through which online gaming is sometimes portrayed as an activity which may engulf an otherwise healthy and happy person to a degree where life outside the game no longer matters. I aim to contest the conventional addiction framework used in the study of problematic online gaming and show the merits of considering a framework that also incorporates a uses and gratification perspective. I have previously made the case for why problematic outcomes of internet use may be thought of as a coping strategy followed by both negative and positive outcomes. This echoes arguments by some researchers (Davies, 1992; Wood, 2008) that everything we refer to as addiction, behavioural or substance-related, may be usefully conceptualized as a way for the individual to cope with difficult life events. I will attempt to support and extend this view through the conceptual framework and hypotheses presented in Chapter 3, by testing a number of proposed models for processes of coping in the context of online gaming.

5.1 Measures for Online Gaming

The methodology chapter (Chapter 4) presented the general literature for the concepts used in this thesis. This section will describe how these concepts have been applied in the study of online gaming specifically.

5.1.1 Escapism

Escapism is a well-researched motivation for playing online games. Fuster et al. (2012) argue that one reason why online games may be particularly effective for escapist purposes is the fact that players may freely create a new identity with desirable attributes. This, they claim, allows players to satisfy their desires and at the same time forget about frustrations (p. 275). Hussain and Griffiths (2009) reported, in a qualitative study, that more than one third of gamers claimed that relaxation and escape was a key function of playing. Similarly, Yee (2006) found, in a quantitative study, that the best predictor of a high score on Young's Diagnostic Questionnaire (1998) for internet addiction was the escapism motivation, indicating that players might be playing online games to avoid thinking about or dealing with real-life problems. Yee's results indicate that players who go online with the motivation of escaping from life problems may experience more problematic outcomes from their gaming, and this result is supported by subsequent studies (Caplan et al., 2009; Kuss et al., 2012; Kneer & Glock, 2013; Kardefelt-Winther, 2014a, 2014c). However, Wood et al. (2007a) found that players also reported escapism as being a positive outcome of gaming. Playing games, their participants claimed, was a desirable spare-time activity because it allowed them to unwind and temporarily escape from everyday stresses and strains.

5.1.2 Achievement

Achievement in gaming has been explored from different perspectives. One perspective draws on the theory of operant conditioning, proposing that part of the appeal of MMORPG games is the continuous rewards which will keep people coming back for more. Further, Blinka and Smahel (2011) state that rewards in an MMO game are often closely tied to long-term and daily presence in the game, which increases the incentive to play every day and for

increasing periods of time. Other researchers have suggested that a sense of achievement, which people may otherwise be unable to attain, can be particularly alluring for some players, as they may use it to cope with low self-esteem or low life satisfaction (Kneer & Glock, 2013; Lemmens et al., 2011; Wan & Chiou, 2006a; Leung, 2007; Williams et al., 2008). It has been proposed that this process may cause certain players to forego real-world activities and turn solely to the online world for social interaction and achievement (Lemmens et al., 2011), which leads to problematic outcomes elsewhere in their lives.

5.1.3 Social motivations

There has been plenty of speculation around social motivations and their impact on the problematic outcomes of online gaming. The speculation revolves around the notion of social compensation, where players are assumed to play games in order to find socially rewarding relationships that they may lack offline (e.g., Kneer & Glock, 2013; Lemmens et al., 2011; Morahan-Martin & Schumacher, 2000). For example, Lemmens et al. (2011) have speculated that for lonely and socially incompetent people online games may provide a welcome alternative to uncomfortable offline interactions (p. 145). Similarly, Chappell et al. (2006) suggest that online games are an effortless, speedy and inexpensive way to socialize and thus avoid feelings of loneliness. However, while the social aspects of the internet have been widely cited as a likely contributor to problematic outcomes (e.g., Young, 1996; Chak & Leung, 2007), little empirical support has been offered for this claim in the context of online gaming. Indeed, the studies of excessive online gaming that have explored social motivations for play (e.g. Caplan et al., 2009, Yee, 2007; Kuss et al., 2012; Collins & Freeman, 2013; Kardefelt-Winther, 2014a, 2014c) did not find that social motivations were associated with

more problematic outcomes, and in some studies it was actually found to be associated with fewer problematic outcomes (e.g., Hellström et al., 2012).

5.1.4 Perceived stress

In the context of online gaming, Leung (2007) found that playing reduced stress arousal for children and adolescents. He suggested that this can lead to reduced family conflicts but may also contribute to problematic outcomes. Stress is assumed to be associated with the escapism motivation because of the documented evidence that escapism in online games affords stress release by allowing the player to avoid or forget about real-life stressors (e.g., Leung, 2007; Wood et al., 2007; Hussain & Griffiths, 2009; Kneer & Glock, 2013; Wan & Chiou, 2006a).

5.1.5 Self-esteem

Low self-esteem has long been associated with problematic gaming (Dominick, 1984). It has been suggested that players may compensate for a weak self-image by seeking out games they have mastery over (Lemmens et al., 2011; Williams, et al., 2008). At the same time, Griffiths and Meredith (2009) argue that, for this very reason, gaming can also improve self-esteem in the long run. However, while playing to compensate for low self-esteem may have some benefits, it can also lead to problematic outcomes (Wan & Chiou, 2006a; Li, Liau & Khoo, 2011).

5.1.6 Loneliness

With regard to online gaming, Wan and Chiou (2006a) reported in a qualitative study that a primary purpose for online gaming amongst adolescents in Taiwan was distraction from

loneliness and isolation. Their results are supported by a number of cross-sectional studies on problematic gaming (e.g., Parsons, 2005; Qin, Rao & Zong, 2007; Lemmens et al., 2011). Furthermore, Seay and Kraut (2007) found in a longitudinal study that loneliness predicted excessive online gaming one year later -- a result supported by Lemmens et al. (2011). These relationships may be explained by the highly social nature of online games and the potential for long-term friendship formation (Cole & Griffiths, 2007; Hussain & Griffiths, 2009). Playing to compensate for loneliness could therefore lead lonely individuals to play more, which may have positive as well as problematic outcomes.

5.1.7 Social anxiety

Cross-sectional studies by Lo et al. (2005) and Lemmens et al. (2009) found a positive association between social anxiety and problematic online gaming. This was later followed up by a longitudinal study (Lemmens et al., 2011), which confirmed that lower social competence was associated with a greater degree of problematic gaming six months later. This reaffirms the notion that people with low social competence, who are therefore lacking in offline social resources, may seek out online games to a greater degree because of their social nature (e.g., Cole & Griffiths, 2007; Hussain & Griffiths, 2009; Collins & Freeman, 2013) and the ways in which they facilitate anonymous interaction (e.g., Wan & Chiou, 2006a). At the same time, this form of social compensation may lead to problematic outcomes (Wan & Chiou, 2006a; Lemmens et al., 2011).

5.1.8 Satisfaction with life

In the context of online gaming, Wan and Chiou (2006b) suggest that online gaming may be a way for dissatisfied individuals to relieve dissatisfaction, rather than pursuing satisfaction.

Cross-sectional studies have shown that lower satisfaction with life is related to a higher likelihood of problematic online gaming (e.g., Ko et al., 2005). Supporting this argument, Lemmens et al. (2011) showed in a longitudinal study that lower satisfaction with life was related to a greater degree of problematic online gaming six months later. This was explained as a function of the player going online to cope with low life satisfaction by striving for goals and achievements they might not otherwise be able to realize (e.g., Wan & Chiou, 2006; Lemmens et al., 2011; Kneer & Glock, 2013).

5.2 Comparing the Addiction and the Uses and Gratifications Frameworks

As reviewed earlier, the addiction framework consistently regards psychosocial well-being as one of the main causal factors for problematic outcomes of internet use. The consequence of this assumption is that a majority of studies have focused on finding correlations between psychosocial well-being and problematic outcomes of internet use. A uses and gratifications framework, on the other hand, suggests that it is the motivations for using media that influence how people engage with them (Katz et al., 1973), and that also determines the outcomes of such engagement (Rosengren, 1974; Shen & Williams, 2010). This chapter combines the two frameworks and tests them across the multiple hypotheses set out in Chapter 3. The question asked is:

Q1a: Which variables from the addiction and the uses and gratifications frameworks are significant predictors of problematic outcomes of online gaming when variables from both frameworks are controlled for?

This question can be answered by the following hypotheses, which will be considered for all regression models in this chapter:

H1a: Psychosocial well-being will be significantly associated with problematic outcomes from online gaming.

H2a: Motivations for use will be significantly associated with problematic outcomes from using social networking sites.

A multiple regression model for the high-problem sample with main effects of demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 5.1. This model will be used as a baseline model for the high-problem sample to which interaction effects are added in the subsequent sections.

Table 5.1: *Multiple linear regression for users with high levels of problematic outcomes: main effects*

Model	Variables	β	t	Model R^2
High NO				.25
	(Constant)		5.74**	
	Age	.003	.060	
	Gender (0F, 1M)	.110	2.39*	
	Social anxiety	-.049	-.868	
	Loneliness	.075	1.22	
	Stress	.064	1.04	
	Sat. w life	.003	.055	
	Self-esteem	-.104	-1.48	
	Social interaction	.-.082	-1.57	
	Achievement	.286	5.67**	
	Escapism	.319	6.14**	

Base: Respondents with high levels of problematic outcomes, N=382.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

The model in Table 5.1 shows that, in the high-problem sample, no indicators of psychosocial well-being are significant when motivations for play are also controlled for, while motivations for escapism and achievement are both significant (Q1a).

A second regression model for the full sample with main effects of demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 5.2. This model will be used as a baseline model for the full sample to which interaction effects are added in the subsequent sections.

Table 5.2: *Multiple linear regression for the full sample: main effects*

Model	Variables	β	t	Model R^2
High NO				.37
	(Constant)		4.58**	
	Age	-.126	.218	
	Gender (0F, 1M)	.061	3.084**	
	Social anxiety	-.068	-.720	
	Loneliness	.016	1.00	
	Stress	-.557	.646	
	Sat. w life	-.120	.308	
	Self-esteem	-.080	-2.94**	
	Social interaction	.043	-3.07**	
	Achievement	.076	11.3**	
	Escapism	-.083	8.79**	

Base: Full sample of respondents, N=702.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

The model in Table 5.2 shows that, for the full sample, self-esteem is the only significant indicator of psychosocial well-being when motivations for play are also controlled for, while all three motivations for play are significant (Q1a).

A post-hoc power analysis was conducted in order to ensure that the statistical power of the tests performed was adequate to detect accurately interaction effects. A sample size of 382 was used for the statistical power analyses for the smaller sample, the high-problem sample, with an 11 predictor variable equation as a baseline. The recommended effect sizes used for this assessment followed on Cohen's (1977) recommendations; small (f_2 = .02), medium (f_2 = .15), and large (f_2 = .35). The alpha level used was $p < .05$. The post-hoc analysis revealed that the statistical power for this regression model was .38 for detecting a small effect, whereas the power exceeded .99 for the detection o medium to large effect sizes including interaction effects. Thus, significant differences for small effect sizes may be harder to detect based on the lower power of the analysis for those sizes. If expected significant effects are found to be non-significant, this might in some cases be explained by a lack of statistical power.

Tests to see if the data met the assumption of collinearity indicated that multicollinearity was not a concern for any of the variables included (Age, Tolerance = .86, VIF = 1.15; Gender, Tolerance = .91, VIF = 1.09; Social Anxiety, Tolerance = .64, VIF = 1.55; Loneliness, Tolerance = .53, VIF = 1.88; Stress, Tolerance = .51, VIF = 1.96; Satisfaction with life, Tolerance = .54, VIF = 1.84; Self-esteem, Tolerance = .44, VIF = 2.20; Social interaction, Tolerance = .75, VIF = 1.31; Achievement, Tolerance = .74, VIF = 1.34; Escapism, Tolerance = .65, VIF = 1.51).

5.3 Findings: Testing the Proposed Processes of Coping in Online Gaming

In this section hypotheses regarding the interaction between psychosocial indicators and motivations for use will be tested in the sample with high levels of problematic outcomes and in the full sample. Each model tested focuses on the relationship between a particular

indicator of psychosocial well-being and the motivation it is assumed, on the basis of the literature, to trigger.

The question asked in this section is:

Q2a: Should the assessment of problematic outcomes of online gaming consider the interaction between psychosocial well-being and motivations for use?

On the basis of the literature presented and the assumptions made in this thesis, it is expected that there will be an interaction between psychosocial well-being and motivations for use and that this should be considered when thinking about problematic outcomes of online gaming. This responds to the broader question asked in this thesis: whether there is a relationship between how someone feels and the reasons for using particular internet platforms, and whether this relationship explains problematic outcomes. If this is the case, problematic outcomes of internet use can be explained as coping behaviour.

5.3.1 Testing moderating effects: escapism, stress and self-esteem

One of the assumptions of a uses and gratifications framework is that people use media to escape from negative feelings or dysphoric moods. Literature on escapism and the coping process suggests that stress and low self-esteem are (Shiffman & Wills, 1985) two common precursors for escapism and avoidance-based coping behaviours. According to the combined framework in Figure 3.1, as applied in this section, this means that high stress or low self-esteem should trigger a motivation to escape via online gaming, and that this is associated with more problematic outcomes.

Stress

The assumption that some people cope with high stress through escapist online gaming, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online gaming, from Chapter 3:

H3a: The association between escapism and problematic outcomes of online gaming is moderated by stress.

Graphically this can be depicted as in Figure 5.1.

Figure 5.1: *Graphical depiction of stress and escapism as the process underlying problematic outcomes of online gaming*
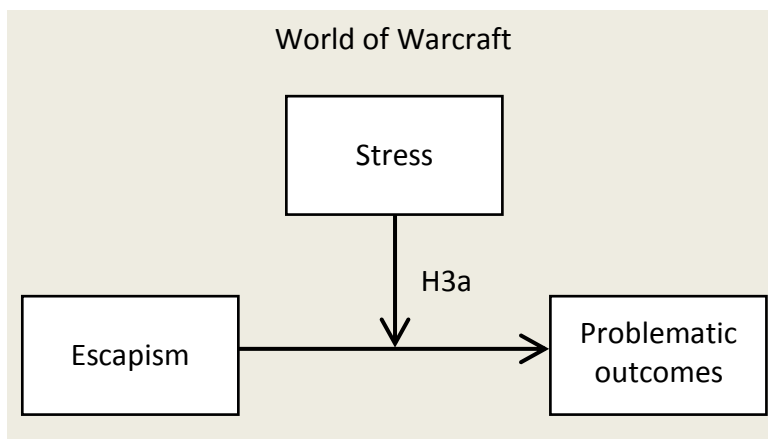
Earlier in this thesis (Chapter 4, section 4.4, p. 101) it was suggested that there may be meaningful differences between the high-problem sample and the full sample. It is argued that, if a coping process explains problematic outcomes, this process may be visible only in the high-problem sample and not in the full sample. If this is the case, it strengthens the argument that this coping process is one reason why some people experience a higher

degree of problematic outcomes. The samples are divided in this chapter for all subsequent

regression models to test H3, both in the high-problem sample and in the full sample.

A multiple regression model for the high-problem sample, with demographic variables,

indicators of psychosocial well-being and motivations for use as predictors, is presented in

Table 5.3. Additionally, an interaction term between escapism and stress was included in

order to test the assumption in H3a.

Table 5.3: *Multiple linear regression for users with high levels of problematic outcomes: interaction between escapism and stress on problematic outcomes*

Model	Variables	β	t	Model R^2
High problems				.27
	(Constant)		6.33**	
	Age	-.039	.196	
	Gender (0F, 1M)	.140	2.49*	
	Social anxiety	-.054	-.544	
	Loneliness	.067	1.13	
	Stress	-.536	-2.68**	
	Sat. w life	-.020	.033	
	Self-esteem	-.095	-1.42	
	Achievement	.292	5.85**	
	Social motivation	-.082	-1.59	
	Escapism	-.099	-.960	
	Escapism*Stress	.877	3.08**	

Base: Respondents with high levels of problem outcomes, N=382.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.3 shows that for users with high levels of problematic outcomes:

- The regression model explained 27% of total variance in problematic outcomes.

- Being male was a significant predictor of more problematic outcomes.

- Stress was significantly and negatively related to problematic outcomes when its

    interaction with escapism is controlled for.

- Users with higher levels of achievement motivations experiences more problematic outcomes.

- The interaction term between escapism and stress was significant.

The significant interaction effect in Table 5.3 supports the assumption that the effect of escapism on problematic outcomes is moderated by stress for users with high levels of problematic outcomes (H3a). To visualize the interaction effect for purposes of interpretation, predicted regression coefficients for problematic outcomes on given combinations of escapism and stress were used to plot the linear interaction effect (see Figure 5.2 below).

Figure 5.2: *Two-way interaction effect between stress and escapism on problematic outcomes for users with high levels of problematic outcomes*
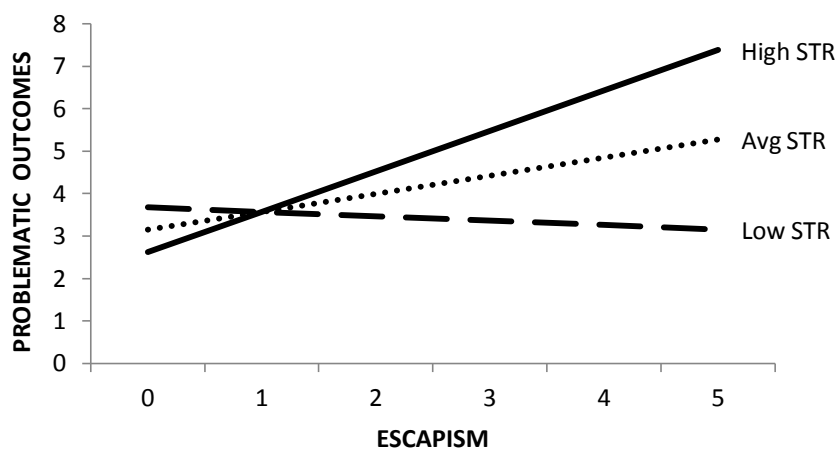
Base: Respondents with high levels of problematic outcomes, N=382.

Figure 5.2 shows that, amongst users who are highly motivated by escapism, those who have high levels of stress tend to experience more problematic outcomes than those with low levels of stress. Figure 5.2 illustrates that, for those with high levels of stress, the association between escapism and problematic outcomes is stronger. In other words, for those with

151

high levels of stress, having high levels of escapism is related to considerably more problematic outcomes. By comparison, for those with low levels of stress the level of escapism motivations makes less of a difference. In fact, for players with low levels of stress, higher levels of escapism motivations tend rather to lead to fewer problematic outcomes. Figure 5.2 illustrates how the association between escapism and problematic outcomes depends on the stress levels of the player.

A second regression model was fitted to test H3a in the full sample. The regression model in Table 5.4 includes as predictors demographic variables, indicators of psychosocial well-being and motivations for use. Additionally, an interaction term between escapism and stress was included to test the assumption in H3a.

Table 5.4: *Multiple linear regression for the full sample: interaction between escapism and stress on problematic outcomes*

Model	Variables	β	t	Model R^2
Full sample				.38
	(Constant)		4.03**	
	Age	.008	.236	
	Gender (0F, 1M)	.097	3.09**	
	Social anxiety	-.026	-.694	
	Loneliness	.042	1.01	
	Stress	-.016	-.129	
	Sat. w life	.013	.307	
	Self-esteem	-.131	-2.88**	
	Achievement	.395	11.32**	
	Social motivation	-.106	-3.06**	
	Escapism	.291	2.90**	
	Escapism*Stress	.068	.365	

Base: Full sample of respondents, N=702.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.4 shows that for the full sample:

- The regression model explained 38% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with higher levels of self-esteem tended to experience fewer problematic outcomes and, conversely, users with lower levels of self-esteem tended to experience more problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience fewer problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- The interaction term between escapism and stress was not significant.

Self-esteem

The assumption that some people cope with low self-esteem via escapist online gaming, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online gaming, from Chapter 3:

H3b: The association between escapism and problematic outcomes of online gaming is moderated by self-esteem.

Graphically this can be depicted as in Figure 5.3.

Figure 5.3: *Graphical depiction of self-esteem and escapism as the process underlying problematic outcomes of online gaming*
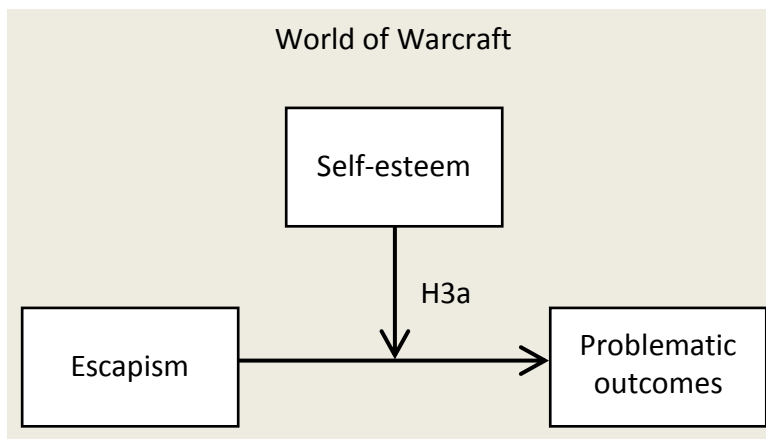
A multiple regression model, with demographic variables, indicators of psychosocial well-being and motivations for use as predictors, is presented in Table 5.5. An interaction term between escapism and self-esteem was included to test the assumption in H3b. The sample was divided to test H3b both in the high problem sample and the full sample.

Table 5.5: *Multiple linear regression for users with high levels of problematic outcomes: interaction between escapism and self-esteem on problematic outcomes*

Model	Variables	β	t	Model R^2
High problems				.30
	(Constant)		.028	
	Age	.005	.101	
	Gender (0F, 1M)	.113	2.51*	
	Social anxiety	-.038	-.683	
	Loneliness	.081	1.34	
	Stress	.063	1.04	
	Sat. w life	-.006	-.100	
	Self-esteem	.794	3.20**	
	Achievement	.299	6.01**	
	Social motivation	-.085	-1.65	
	Escapism	1.14	5.09**	
	Escapism*Self-esteem	-.985	-3.77**	

Base: Respondents with high levels of problematic outcomes, N=382.

 * Correlation significant, $p < .05$.

** Correlation significant, $p < .01$.

Table 5.5 shows that for users with high levels of problematic outcomes:

- The regression model explained 30% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with high self-esteem tended to experience more problematic outcomes and, conversely, users with low self-esteem tended to experience fewer problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- The interaction term between escapism and self-esteem was significant.

The significant interaction effect in Table 5.5 supports the assumption that the effect of escapism on problematic outcomes is moderated by self-esteem for users with high levels of problematic outcomes (H3b). To visualize the interaction effect for purposes of interpretation, predicted regression coefficients for problematic outcomes on given combinations of escapism and self-esteem were used to plot the linear interaction effect (see Figure 5.4 below).

Figure 5.4: *Two-way interaction effect between self-esteem and escapism on problematic outcomes for users with high levels of problematic outcomes*
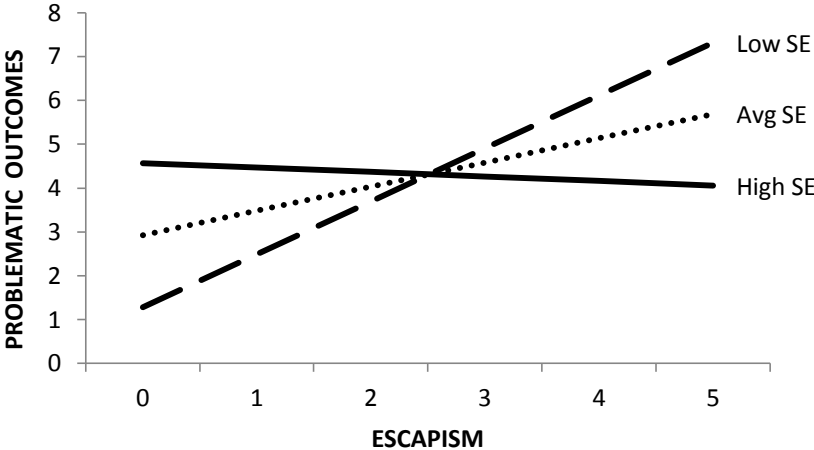
Base: Respondents with high levels of problematic outcomes, N=382.

Figure 5.4 shows that, amongst users who are highly motivated by escapism, those with low self-esteem tend to experience more problematic outcomes, while those with high self-esteem experience fewer problematic outcomes. Crucially, Figure 5.4 shows that for those with low levels of self-esteem the association between escapism and problematic outcomes is stronger. In other words, for those with low levels of self-esteem, high levels of escapism are related to more problematic outcomes. By comparison, for those with high self-esteem the level of escapism motivation makes less difference and seems to be associated with slightly fewer problematic outcomes. Figure 5.4 illustrates how the association between motivations for play and problematic outcomes depends on the self-esteem of the player.

A second regression model was fitted to test H3b in the full sample. The regression model in Table 5.6 includes demographic variables, indicators of psychosocial well-being and motivations for use as predictors. Additionally, an interaction term between escapism and self-esteem was included to test the assumption in H3b.

Table 5.6: *Multiple linear regression for the full sample: interaction between escapism and self-esteem on problematic outcomes*

Model	Variables	β	t	Model R^2
Full sample				.38
	(Constant)		.735	
	Age	.009	.266	
	Gender (0F, 1M)	.099	3.16**	
	Social anxiety	-.026	-.708	
	Loneliness	.048	1.15	
	Stress	.028	.656	
	Sat. w life	.007	.164	
	Self-esteem	.173	1.18	
	Achievement	.395	11.3**	
	Social motivation	-.106	-3.08**	
	Escapism	.678	.4.13**	
	Escapism*Self-esteem	-.365	-2.20*	

Base: Full sample of respondents, N=702.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.6 shows that for the full sample:

- The regression model explained 38% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience fewer problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- The interaction term between escapism and self-esteem was significant.

The significant interaction effect in Table 5.6 shows that the effect of escapism on problematic outcomes is moderated by self-esteem also in the full sample (H3b). To visualize the interaction effect for purposes of interpretation, predicted regression coefficients for problematic outcomes on given combinations of escapism and self-esteem were used to plot the linear interaction effect (see Figure 5.5 below).

Figure 5.5: *Two-way interaction effect between self-esteem and escapism on problematic outcomes for the full sample*
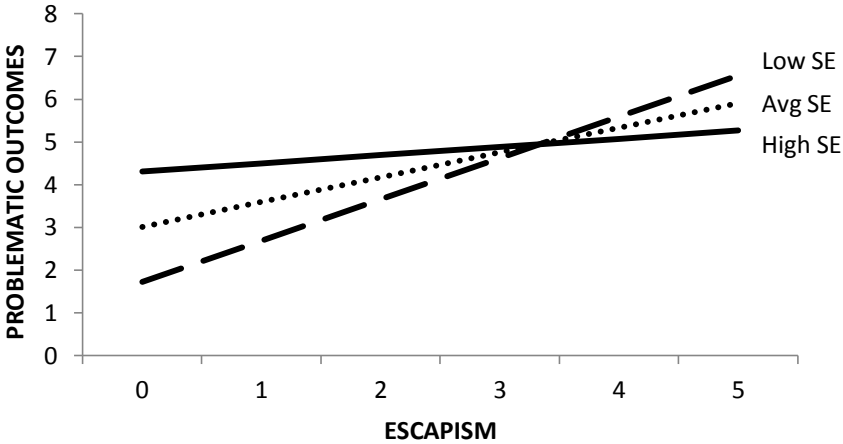
Base: Full sample of respondents, N=702.

Figure 5.5 shows that for players with low self-esteem the association between escapism and problematic outcomes is stronger than for players with high self-esteem. Furthermore, Figure 5.5 shows that, for players who are not motivated by escapism, low self-esteem is related to fewer problematic outcomes, and high self-esteem to more problematic outcomes. Again, the results indicate that for those with high self-esteem the level of escapism makes less difference.

5.3.2 Testing the causal sequence: escapism, stress and self-esteem

The combined framework in Figure 3.1 (see Chapter 3) implies a causal model where low well-being motivates a person to go online and use certain platforms to cope with negative feelings, which results in problematic outcomes.

The main question to be addressed in this section by the path models is:

Q3a: To what extent can the proposed causal processes involving escapism, stress and self-esteem explain problematic outcomes of online gaming?

If the assumptions underlying the combined framework are correct then the effects of stress and self-esteem should be at least partially mediated by escapism. Following the causal sequence as presented in Figure 3.1, as applied in this section, high stress and low self-esteem should lead to a motivation for escape, pursued via online gaming, which leads to problematic outcomes. Underlying this model is the hypothesis (H4) that the association between psychosocial well-being and problematic outcomes is partly mediated by motivations for use. In a path model, partial mediation would be indicated by significant indirect effects between stress or self-esteem and problematic outcomes. In this section, partial mediation means that the effect of stress or self-esteem on problematic outcomes of online gaming is partly explained by their influence on escapism. This would support the proposed causal processes as stated in H4, and the proposal that problematic outcomes of online gaming can be explained as a goal-oriented coping strategy rather than as an addiction.

The assumption that part of the effect of stress or self-esteem on problematic outcomes is mediated by escapism can be expressed in the following hypotheses, adapted for online gaming, from Chapter 3:

H4a: The association between stress and problematic outcomes is partly mediated by escapism.

H4b: The association between self-esteem and problematic outcomes is partly mediated by escapism.

The model in Figure 5.6 shows the hypothesized processes underlying problematic outcomes, sequentially ordered according to the combined framework. The model in Figure 5.6 is similar to that in Figure 3.1, but contains the specific measures that operationalize the relevant concepts for this section. Figure 5.6 shows how the effect of stress and self-esteem are hypothesized to have an indirect and direct effect on problematic outcomes, which accommodates the assumptions of both the addiction framework and a uses and gratifications framework. The fit of the path model to the sample with high levels of problematic outcomes will be compared with the fit of the model to the full sample. This extends the assumption that processes of coping may underlie problematic outcomes only in the high problem sample, which would offer one explanation for the higher degree of problematic outcomes in this sample.

Figure 5.6: *Path model for escapism, stress and self-esteem on problematic outcomes*
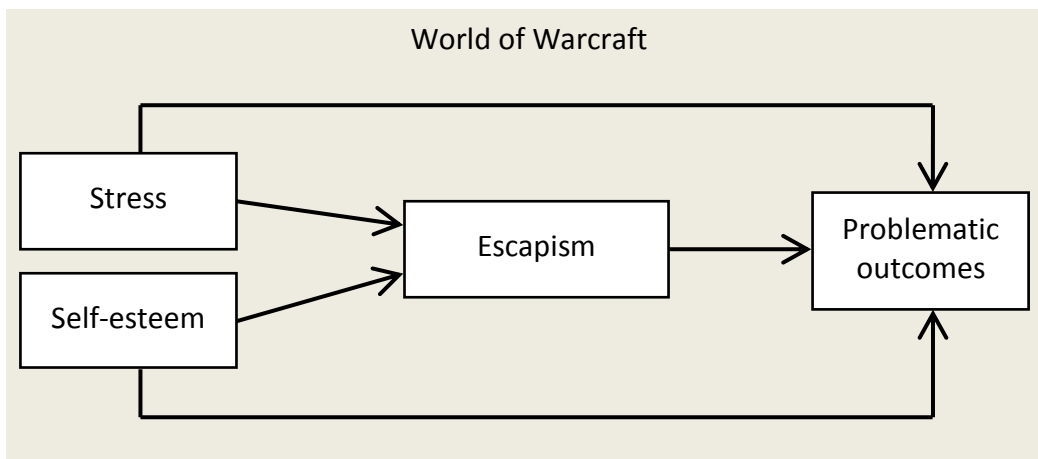
The model, as tested in Table 5.7, was a moderate fit under all indicators for complex models (see Hu & Bentler, 1995, 1999) when insignificant paths between demographics and psychosocial variables were set to zero ($\chi^2_{(9)}$=27.517, p.= .001; CFI=.95; RMSEA= .07 (c.i.=.04-.10), p=.10; AIC= 63.517); 17.9% of the variance in problematic outcomes (see Table 5.6) is explained by the model presented in Table 5.7.

A similar model for the full sample was a worse fit to the data ($\chi^2_{(9)}$=76.785, p.= .00; CFI=.91; RMSEA= .10 (c.i.=.08-.13, p=.000); AIC= 112.785).

Table 5.7: *Coefficients for the escapism path model in the high-problem sample*

			β	b
Self-esteem	--->	Escapism	-.205*	-.095*
Self-esteem	--->	Problematic outcomes	-.097	-.066
Stress	--->	Escapism	.246*	.123*
Stress	--->	Problematic outcomes	.097	.071
Escapism	--->	Problematic outcomes	.320*	.468*

Base: Respondents with high levels of problematic outcomes, N=382.

 * Coefficient significant, p <.01.

Table 5.8: *Standardized explanatory power of variables in path model on problematic outcomes in the high-problem sample: escapism, stress and self-esteem*

	R2	Total	Direct	Indirect
Stress		.175	.097	.079
Self-esteem		-.163	-.097	-.065
Escapism	.166	.320	.320	
Problematic outcomes	.179			

Base: Respondents with high levels of problematic outcomes, N=382.

The path model shows that part of the effect both of stress (H4a) and of self-esteem (H4b) on problematic outcomes is indirect and mediated by escapism. The results show that stress and self-esteem carry their influence on problematic outcomes partly by influencing escapism. A bootstrap approximation obtained by constructing two-sided, bias-corrected confidence intervals showed that the mediated effects of stress and self-esteem on problematic outcomes were both significantly different from zero (p=.001, two-tailed).

5.3.3 Discussion

This section sought to understand the extent to which the proposed causal processes can explain problematic outcomes of online gaming, focusing on the parts of the process involving escapism, stress and self-esteem. As part of the process analysis, both moderating and mediating effects were examined. A number of significant main effects were discovered in the regression models and these will be discussed in the chapter conclusions.

The results from the regression models in section 5.3.1 showed that users with high stress or low self-esteem experience more problematic outcomes if they have high levels of escapism motivations. At the same time, the reverse applies for those who are not motivated by escapism; for these users, high self-esteem or low stress was associated with more problematic outcomes while low self-esteem or high stress was associated with fewer

problematic outcomes. This supports hypotheses H3a and H3b that the effect of stress or self-esteem moderates the association between escapism motivations and problematic outcomes. For stress, the result applies only in the sample with high levels of problematic outcomes, while for self-esteem it applies in both samples. It was expected that the interaction effects would only be significant in the samples with high levels of problematic outcomes, but the results from the regression models show that this was not the case.

The significant interaction effect between self-esteem and escapism motivations in the full sample (Figure 5.5) was somewhat weaker than in the sample with high levels of problematic outcomes. Nonetheless, this finding suggests that self-esteem in conjunction with escapism motivations may be such an important precursor of the process of coping in online games that it leads to more problematic outcomes even in the full sample of users.

While it was expected that the relationship between escapism motivations and problematic outcomes would be positive for those with high stress or low self-esteem in the sample with high levels of problematic outcomes, it was surprising that the relationship between escapism and problematic outcomes was negative for those with low stress or high self-esteem. On the basis of the literature it was expected that low stress but high levels of escapism motivations would still be associated with more problematic outcomes due to the strong association between escapism motivations and problematic outcomes found in a number of studies (e.g., Yee, 2006; Caplan et al., 2009; Kuss et al., 2012; Kneer & Glock, 2013). It may be that in the group of players who experience high levels of problematic outcomes, stress is such an important moderator for the association between escapism motivations and problematic outcomes that, in the absence of stress, escapism is no longer a

significant predictor. This is shown in Table 5.3, where stress has a negative association with problematic outcomes when its interaction with escapism is controlled for, and the main effect of escapism is insignificant and close to zero. Thus, within this group, escapism only has an effect for those with high stress and does not have an independent effect when stress is absent. In the absence of escapism motivations, higher stress or low self-esteem leads to fewer problematic outcomes rather than more, which is reflected in Figure 5.2 and Figure 5.4.

Finally, the results from the path models show that, while escapism motivations may be a reliable predictor for problematic outcomes of online gaming on its own (Table 5.7), we also need to take into account the additive effects from stress and self-esteem. Importantly, the direct effects of stress and self-esteem on problematic outcomes were not significant, while the indirect effects were significant. This questions the applicability of the addiction framework in isolation. It also supports the theoretical model proposed in Figure 3.1 of a causal process involving stress, self-esteem and escapism as underlying problematic outcomes of online gaming (Q3a).

5.3.4 Testing moderating effects: achievement, satisfaction with life and self-esteem

One of the assumptions of Yee's (2006) theory of gaming motivations is that people who play online games are motivated by achievement, a motivation revolving around competition, advancement and mastery of the game. As discussed earlier, achievement-oriented gaming has been proposed as a way in which people compensate for low self-esteem or low satisfaction with life (Williams et al., 2008; Leung, 2007; Lemmens et al., 2011; Wan & Chiou, 2006a; Kneer & Glock, 2013). Supporting these arguments, Caplan et al.

(2009) found that advancement, which is a sub-type of achievement, was related to more problematic outcomes of online gaming. In another study, achievement was also the strongest predictor of more playing time (Williams et al., 2008). Taken together, this suggests that achievement-oriented game play may be a way for people to cope with low self-esteem or low satisfaction with life, which can lead to more problematic outcomes because of the amount of time spent online.

Satisfaction with life

The assumption that some people cope with low satisfaction with life through achievement-oriented online gaming, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online gaming, from Chapter 3:

> H3c: The association between achievement and problematic outcomes of online gaming is moderated by satisfaction with life.

Graphically this can be depicted as in Figure 5.7

Figure 5.7: *Graphical depiction of satisfaction with life and achievement as the process underlying problematic outcomes of online gaming*
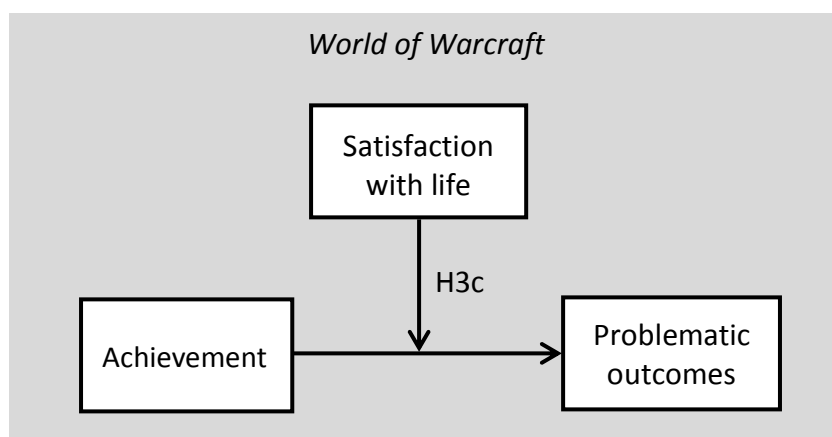
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 5.9. Additionally, an interaction term between achievement and satisfaction with life was included to test the assumption in H3c. The sample was divided to test H3c both in the high-problem sample and in the full sample.

Table 5.9: *Multiple linear regression for users with high levels of problematic outcomes: interaction between achievement and satisfaction with life on problematic outcomes*

Model	Variables	β	t	Model R²
High problems				.27
	(Constant)		5.71**	
	Age	-.084	.072	
	Gender (0F, 1M)	.152	2.37*	
	Social anxiety	-.105	-.872	
	Loneliness	.063	1.20	
	Stress	1.55	1.04	
	Sat. w life	-.029	-.027	
	Self-esteem	-.151	-1.49	
	Escapism	.678	6.10**	
	Social motivation	-.083	-1.58	
	Achievement	.243	1.50	
	Achievement*Sat. w life	.046	.283	

Base: Respondents with high levels of problem outcomes, N=382.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.9 shows that for users with high levels of problematic outcomes:

- The regression model explains 27% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more

  problematic outcomes.

- The interaction term between achievement and satisfaction with life was not significant.

A second regression model was fitted to test H3c in the full sample. The regression model in Table 5.10 includes demographic variables, indicators of psychosocial well-being and motivations for use as predictors. Additionally, an interaction term between achievement and satisfaction with life was included to test the assumption in H3c.

Table 5.10: *Multiple linear regression for the full sample: interaction between achievement and satisfaction with life on problematic outcomes*

Model	Variables	β	t	Model R^2
Full sample				.38
	(Constant)		4.38**	
	Age	.002	.073	
	Gender (0F, 1M)	.098	3.13**	
	Social anxiety	-.024	-.643	
	Loneliness	.047	1.12	
	Stress	.027	.648	
	Sat. w life	.011	.264	
	Self-esteem	-.125	-2.75**	
	Escapism	.325	8.80**	
	Social motivation	-.100	-2.88**	
	Achievement	.574	5.00**	
	Achievement*Sat. w life	-.191	-1.64	

Base: Base: Full sample of respondents, N=702.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.10 shows that for the full sample:

- The regression model explains 38% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with high self-esteem tended to experience fewer problematic outcomes and, conversely, users with low self-esteem tended to experience more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience fewer problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- The interaction effect between achievement and satisfaction with life was not significant.

Self-esteem

The assumption that some people cope with low self-esteem through achievement-oriented online gaming, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online gaming, from Chapter 3:

H3d: The association between achievement and problematic outcomes of online gaming is moderated by self-esteem.

Graphically this can be depicted as in Figure 5.8.

Figure 5.8: *Graphical depiction of self-esteem and achievement as the process underlying problematic outcomes of online gaming*
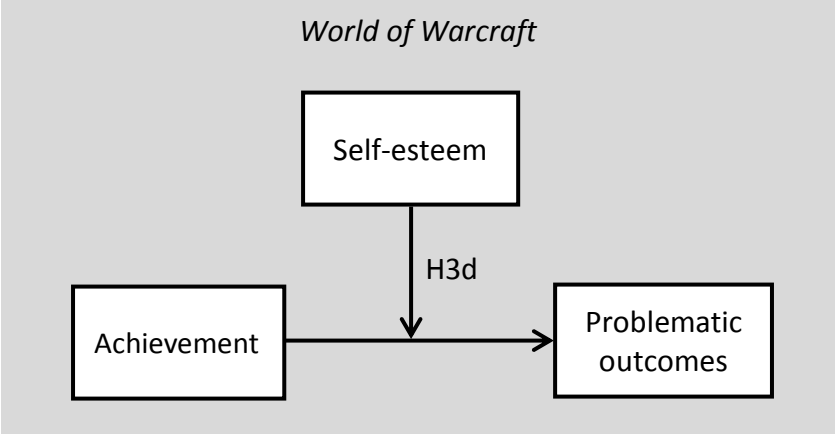
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 5.11. An interaction term between achievement and self-esteem was included to test the assumption in H3d. The sample was divided to test H3d both in the high-problem sample and the full sample.

Table 5.11: *Multiple linear regression for users with high levels of problematic outcomes: interaction between achievement and self-esteem on problematic outcomes*

Model	Variables	β	t	Model R^2
High problems				.25
	(Constant)		5.65**	
	Age	-.002	.049	
	Gender (0F, 1M)	.110	.2.39*	
	Social anxiety	-.046	-.826	
	Loneliness	..076	1.23	
	Stress	.063	1.03	
	Sat. w life	.005	.080	
	Self-esteem	-.101	-1.42	
	Escapism	.318	6.11**	
	Social motivation	-.080	-1.53	
	Achievement	.366	-1.76	
	Achievement*Self-esteem	-.082	-.395	

Base: Respondents with high levels of problematic outcomes, N=382.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.11 shows that for users with high levels of problematic outcomes:

- The regression model explains 25% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- The interaction term between achievement and self-esteem was not significant.

A second regression model was fitted to test H3d in the full sample. The regression model in Table 5.12 includes demographic variables, indicators of psychosocial well-being and motivations for use as predictors. Additionally, an interaction term between achievement and self-esteem was included to test the assumption in H3d.

Table 5.12: *Multiple linear regression for the full sample: interaction between achievement and self-esteem on problematic outcomes*

Model	Variables	β	t	Model R^2
Full sample				.38
	(Constant)		4.48**	
	Age	.005	.165	
	Gender (0F, 1M)	.097	3.10**	
	Social anxiety	-.023	-.614	
	Loneliness	.047	1.13	
	Stress	.024	.573	
	Sat. w life	.015	.372	
	Self-esteem	-.131	-2.90**	
	Escapism	.321	8.67**	
	Social motivation	-.102	-2.94**	
	Achievement	.680	.4.06**	
	Achievement*Self-esteem	-.292	-1.74	

Base: Full sample of respondents, N=702.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.12 shows that for the full sample:

- The regression model explains 38% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with high self-esteem tended to experience fewer problematic outcomes and, conversely, users with low self-esteem tended to experience more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience fewer problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- The interaction effect between achievement and self-esteem was not significant.

5.3.5 Testing the causal sequence: achievement, satisfaction with life and self-esteem

The combined framework in Figure 3.1 implies a causal model where low well-being motivates a person to go online and use certain platforms to cope with negative feelings, which results in problematic outcomes.

The main question to be addressed by the path models in this section is:

Q3b: To what extent can the proposed causal processes involving achievement, satisfaction with life and self-esteem explain problematic outcomes of online gaming?

If the assumptions underlying the combined framework are correct, then the effects of satisfaction with life and self-esteem should be at least partially mediated by achievement. Following the causal sequence as presented in Figure 3.1 (see Chapter 3) as applied to this section, low satisfaction with life and low self-esteem should lead to more achievement-oriented online gaming, which eventually leads to more problematic outcomes. Underlying this model is the hypothesis (H4) that the association between psychosocial well-being and problematic outcomes is partly mediated by motivation for use. Partial mediation will be indicated in this section by significant indirect effects between satisfaction with life or self-esteem and problematic outcomes.

The assumption that part of the effect of satisfaction with life or self-esteem on problematic outcomes is mediated by achievement can be expressed in the following hypotheses, adapted for online gaming, from Chapter 3:

H4c: The association between satisfaction with life and problematic outcomes is partly mediated by achievement.

H4d: The association between self-esteem and problematic outcomes is partly mediated by achievement.

The model in Figure 5.9 shows the hypothesized processes underlying problematic outcomes, sequentially ordered in accordance with the combined framework. The fit of the path model to the sample with high levels of problematic outcomes will be compared with the model's fit to the full sample.

172

Figure 5.9: *Path model for achievement, satisfaction with life and self-esteem on problematic outcomes*
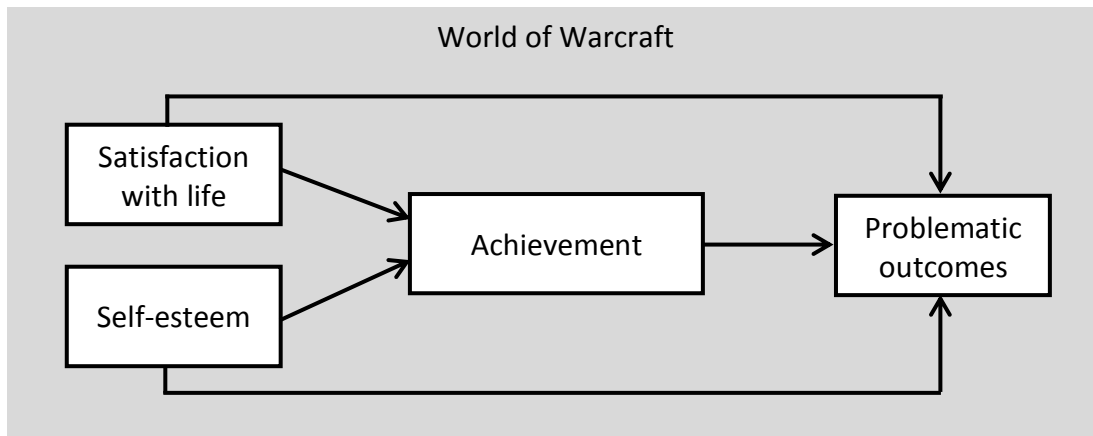
The model as tested in Table 5.13 was a moderate fit to the data when insignificant paths between demographics and psychosocial variables were set to zero ($\chi^2_{(8)}$=35.302, p.= .000; CFI=.90; RMSEA= .09 (c.i.=.06-.13); p =.01; AIC= 73.302).

A similar model for the full sample was a worse fit to the data ($\chi^2_{(9)}$=108.624, p.= .000; CFI=.85; RMSEA= .13 (c.i.=.11-.16, p=.000); AIC= 146.624).

Table 5.13: *Coefficients for the achievement path model in the high-problem sample*

			β	b
Age	--->	Satisfaction with life	-.140*	-.022*
Self-esteem	--->	Achievement	-.027	-.026
Self-esteem	--->	Problematic outcomes	-.231*	-.157*
Satisfaction with life	--->	Achievement	-.014	-.012
Satisfaction with life	--->	Problematic outcomes	-.054	-.033
Achievement	--->	Problematic outcomes	.299*	.212*

Base: Respondents with high levels of problematic outcomes, N=382.

 * Coefficient significant, p <.01.

173

Table 5.14: *Standardized explanatory power of variables in the achievement path model in the high-problem sample*

	R2	Total	Direct	Indirect
Self-esteem	.010	-240	-.231	-.008
Satisfaction with life	.013	-.058	-.054	-.004
Achievement	.001	.299	.299	
Problematic outcomes	.167			

Base: Respondents with high levels of problematic outcomes, N=382.

The path model shows no support for the assumption that achievement mediates the effects of satisfaction with life (H4c) or of self-esteem (H4d) on problematic outcomes (Q3b). However, self-esteem was negatively and directly related to problematic outcomes when other relationships were controlled for. This was surprising, as the regression models in Tables 5.9 and 5.11 for the sample with high levels of problematic outcomes show no such effect. The negative effect seen here may be explained by the lack of the additional variables controlled for in the regression models.

5.3.6 Discussion

This section has sought to understand the extent to which the proposed causal processes of coping can explain problematic outcomes of online gaming, focusing on the parts of the process involving achievement, satisfaction with life and self-esteem. As part of the process analysis, both moderating and mediating effects were explored. A number of significant main effects were discovered in the regression models, and these will be discussed in the chapter conclusions.

The results from the regression models in section 5.4.4 show that none of the hypothesized interaction effects were significant. It was assumed that the association between achievement and problematic outcomes would be moderated by self-esteem (H3d) or

satisfaction with life (H3c). These hypotheses were not supported by the findings, which showed no significant interaction effects either in the sample with high levels of problematic outcomes or in the full sample. Furthermore, the path model found no support for the theoretical proposition that achievement mediates the relationship between satisfaction with life or self-esteem and problematic outcomes of online gaming.

Notably, a path model that places achievement at the same temporal level as indicators of psychosocial well-being was a moderate fit under all indicators ($\chi^2_{(9)}$=25.042, p.= .003; CFI=.94; RMSEA= .07 (c.i.=.04-.10), p>14; AIC= 61.042). This suggests that the eventual mediating effects of achievement, if any, are unrelated to satisfaction with life or with self-esteem. These findings possibly explain the non-significant interaction effects between self-esteem (H3c) or satisfaction with life (H3d) and achievement, as well as the lack of mediating effects (H4c and H4d).

However, further analysis, not included in this thesis, showed that interaction effects between satisfaction with life and achievement were significant if mean values, rather than factor scores, were used to compute the final achievement score. This will be discussed further in the chapter conclusions.

Finally, it is worth noting that interaction effects for both satisfaction with life and self-esteem were nearly significant in the full sample (Table 5.10 and Table 5.12). This may reflect the fact that achievement-oriented behaviour is fundamental to almost all World of Warcraft players, but, rather than this being a consequence of life problems and an attempt to cope with negative feelings, it may be that people who generally have somewhat low

satisfaction with life or self-esteem, though not at problematic levels, tend to play games

with strong achievement components because these provide a sense of enjoyment. This is in

line with speculation by Williams et al. (2008) and Lemmens et al. (2011) and illustrates the

fine line to be walked when distinguishing between an enjoyable habit and a persistent

coping behaviour. Lazarus and Folkman (1984) write that automated responses may over

time become coping behaviours in the form of learned behaviours. This suggests that even

seemingly innocent uses of online games, such as consistently turning to achievement-

oriented game play after failing an exam, may in the long run lead to maladaptive coping

behaviours with problematic outcomes even in the absence of psychosocial problems. At the

same time, this risk needs to be balanced against the potential for beneficial outcomes (e.g.,

Durkin & Barber, 2002; Griffiths & Meredith, 2009; Papastergiou, 2009). This echoes

Livingstone and Helsper's (2010) argument that perceived risk is not the same as actual

harm.

5.3.7 Testing moderating effects: social motivations, social anxiety and loneliness

One of the assumptions of both uses and gratifications theory (Katz et al., 1973) and Yee's

(2006) theory of gaming motivations is that people who play online games are motivated by

social interaction. As discussed earlier, several authors have suggested that the highly social

and interactive nature of games may compensate for feelings of loneliness (Cole & Griffiths,

2007) and allow those who seek to avoid real-world social interaction because of social

anxiety a space for interacting with other people (Morahan-Martin & Schumacher, 2000;

Caplan, 2002, 2005; Caplan et al., 2009). The existing literature thus makes a compelling case

for social motivations and how playing online games may be a way for people to cope with

social anxiety or loneliness -- two psychosocial issues that typically reduce the quality of interpersonal relationships and social interaction in real life.

Social anxiety

The assumption that some people cope with social anxiety through social interaction in online gaming, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online gaming, from Chapter 3:

H3e: The association between social motivations and problematic outcomes of online gaming is moderated by social anxiety.

Graphically this can be depicted as in Figure 5.10.

Figure 5.10: *Graphical depiction of social anxiety and social motivations as the process underlying problematic outcomes of online gaming*
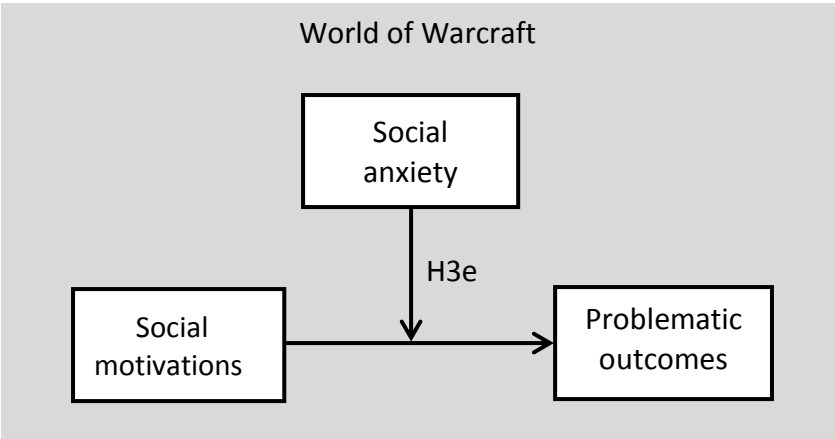
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 5.15. Additionally, an interaction term between social anxiety and social motivations was included to test the

177

assumption in H3e. The sample was divided to test H3e both in the high-problem sample and

in the full sample.

Table 5.15: *Multiple linear regression for users with high levels of problematic outcomes: interaction between social motivations and social anxiety*

Model	Variables	β	t	Model R²
High problems				.25
	(Constant)		4.67**	
	Age		.009	
	Gender (0F, 1M)	.107	2.34*	
	Social anxiety	-.324	-1.16	
	Loneliness	.082	1.33	
	Stress	.070	1.13	
	Sat. w life	.008	.137	
	Self-esteem	-.105	-1.49	
	Escapism	.319	6.12**	
	Achievement	.288	5.70**	
	Social motivations	-.218	-1.50	
	Social mot.*Social anxiety	.309	1.00	

Base: Respondents with high levels of problem outcomes, N=382.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.15 shows that for users with high levels of problematic outcomes:

- The regression model explains 25% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more

  problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more

  problematic outcomes.

- The interaction term between social motivations and social anxiety was not

  significant.

178

A second regression model was fitted to test H3e in the full sample. The regression model in Table 5.16 includes as predictors demographic variables, indicators of psychosocial well-being and motivations for use. Additionally, an interaction term between social motivations and social anxiety was included to test the assumption in H3e.

Table 5.16: *Multiple linear regression for the full sample: interaction between social motivations and social anxiety*

Model	Variables	β	t	Model R²
Full sample				.38
	(Constant)		5.03**	
	Age	.001	.038	
	Gender (0F, 1M)	.094	3.01**	
	Social anxiety	-.423	-2.50*	
	Loneliness	.052	1.26	
	Stress	.033	.791	
	Sat. w life	.017	.417	
	Self-esteem	-.129	-2.87**	
	Escapism	.326	8.83**	
	Achievement	.402	11.5**	
	Social motivation	-.301	-3.41**	
	Social mot.*Social anxiety	.448	2.40*	

Base: Base: Full sample of respondents, N=702.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.16 shows that for the full sample:

- The regression model explains 38% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with higher levels of social anxiety tended to experience fewer problematic outcomes and, conversely, users with low levels of social anxiety tended to experience more problematic outcomes.

- Users with high self-esteem tended to experience fewer problematic outcomes and, conversely, users with low self-esteem tended to experience more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience fewer problematic outcomes.

- The interaction term between social motivations and social anxiety was significant.

The significant interaction effect in Table 5.16 supports the assumption that the effect of social motivations on problematic outcomes is moderated in the full sample by social anxiety (H3e). To visualize the interaction effect for purposes of interpretation, predicted regression coefficients for problematic outcomes on given combinations of social motivations and social anxiety were used to plot the linear interaction effect (see Figure 5.11).

Figure 5.11: *Two-way interaction effect between social anxiety and social motivations on problematic outcomes for the full sample*
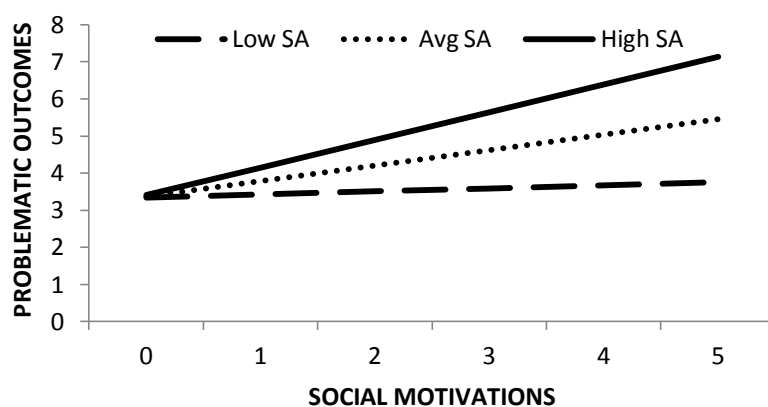
Base: Full sample of respondents, N=702.

Figure 5.11 shows that, amongst players who are highly motivated by social motivations, those with high levels of social anxiety tend to experience more problematic outcomes while those with low levels of social anxiety tend to experience fewer problematic outcomes. Figure 5.11 illustrates the fact that for players with high social anxiety higher levels of social motivation are associated with more problematic outcomes, while for players with low social anxiety the level of social motivation makes less difference.

Loneliness

The assumption that some people cope with loneliness through social interaction in online gaming, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online gaming, from Chapter 3:

H3f: The association between social motivations and problematic outcomes of online gaming is moderated by loneliness.

Graphically this can be depicted as in Figure 5.12.

Figure 5.12: *Graphical depiction of loneliness and social motivations as the process underlying problematic outcomes of online gaming*
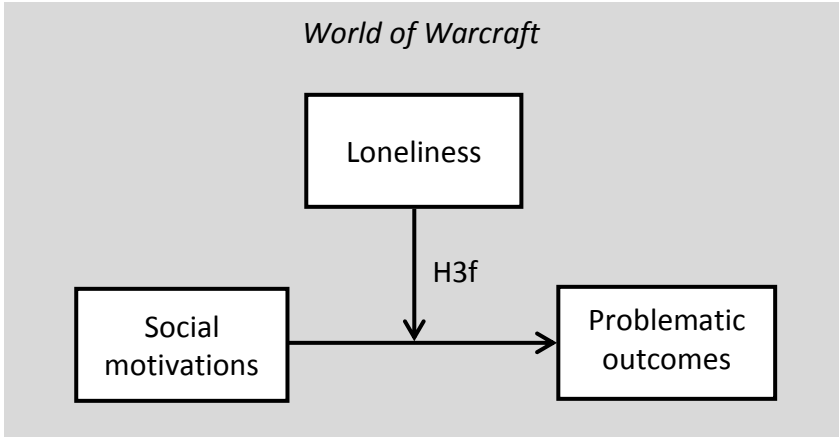
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 5.17. An interaction term between loneliness and social motivations was included to test the assumption in H3f. The sample was divided to test H3f both in the high problem sample and the full sample.

Table 5.17: *Multiple linear regression for users with high levels of problematic outcomes: interaction between social motivations and loneliness*

Model	Variables	β	t	Model R²
High problems				.25
	(Constant)		4.61**	
	Age	.004	.091	
	Gender (0F, 1M)	.107	2.31*	
	Social anxiety	-.043	-.755	
	Loneliness	-.134	-.504	
	Stress	.067	.1.09	
	Sat. w life	.004	.065	
	Self-esteem	-.101	-1.43	
	Escapism	.316	6.06**	
	Achievement	.291	5.72**	
	Social motivation	-.188	-1.33	
	Social mot*Loneliness	.230	.808	

Base: Respondents with high levels of problem outcomes, N=382.

* Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.17 shows that for users with high levels of problematic outcomes:

- The regression model explains 25% of total variance in problematic outcomes.

- Being male was significantly associated with more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- The interaction term between social motivations and loneliness was not significant.

A second regression model was fitted to test H3f in the full sample. The regression model in Table 5.18 includes demographic variables, indicators of psychosocial well-being and motivations for use as predictors. Additionally, an interaction term between social motivations and loneliness was included to test the assumption in H3f.

Table 5.18: *Multiple linear regression for the full sample: interaction between social motivations and loneliness*

Model	Variables	β	t	Model R^2
Full sample				.37
	(Constant)		4.31**	
	Age	.005	.155	
	Gender (0F, 1M)	.094	2.98**	
	Social anxiety	-.021	-.557	
	Loneliness	-.219	-1.23	
	Stress	.030	.704	
	Sat. w life	.011	.272	
	Self-esteem	-.128	-2.82**	
	Escapism	.321	8.67**	
	Achievement	.399	11.4**	
	Social motivation	-.241	-2.51*	
	Social mot.*Loneliness	.290	1.51	

Base: Full sample of respondents, N=702.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 5.18 shows that for the full sample:

- The regression model explains 37% of total variance in problematic outcome.

- Being male was significantly associated with more problematic outcomes.

- Users with high self-esteem tended to experience fewer problematic outcomes and, conversely, users with low self-esteem tended to experience more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience fewer problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- The interaction effect between satisfaction with life and achievement was not significant.

5.3.8 Testing the causal sequence: social motivations, social anxiety and loneliness

The combined framework in Figure 3.1 implies a causal model where low well-being motivates a person to go online and use certain platforms that keep negative thoughts at bay, which results in more problematic outcomes.

The main question to be addressed by the path models in this section is:

Q3c: To what extent can the proposed causal processes involving social motivations, social anxiety and loneliness explain problematic outcomes of online gaming?

If the assumptions underlying the combined framework are correct, then the effects of social anxiety and loneliness should be at least partially mediated by social motivations for online gaming. Following the causal sequence presented in Figure 3.1 (see Chapter 3) as applied to

this section, high levels of social anxiety and loneliness should lead to higher levels of social motivation in online games, which eventually leads to problematic outcomes. Underlying this model is the hypothesis (H4) that the association between psychosocial well-being and problematic outcomes is partly mediated by motivation for use. Partial mediation in this section will be indicated by significant indirect effects of social anxiety or loneliness on problematic outcomes.

The assumption that part of the effect of social anxiety or loneliness on problematic outcomes is mediated by social motivations can be expressed in the following hypotheses, adapted for online gaming, from Chapter 3:

H4e: The association between social anxiety and problematic outcomes is partly mediated by social motivations.

H4f: The association between loneliness and problematic outcomes is partly mediated by social motivations.

The model in Figure 5.13 shows the hypothesized processes underlying problematic outcomes, sequentially ordered according to the combined framework. The fit of the path model to the sample with high levels of problematic outcomes will be compared to the model's fit to the full sample.

Figure 5.13: *Path model for association of social motivations, social anxiety and loneliness with problematic outcomes*
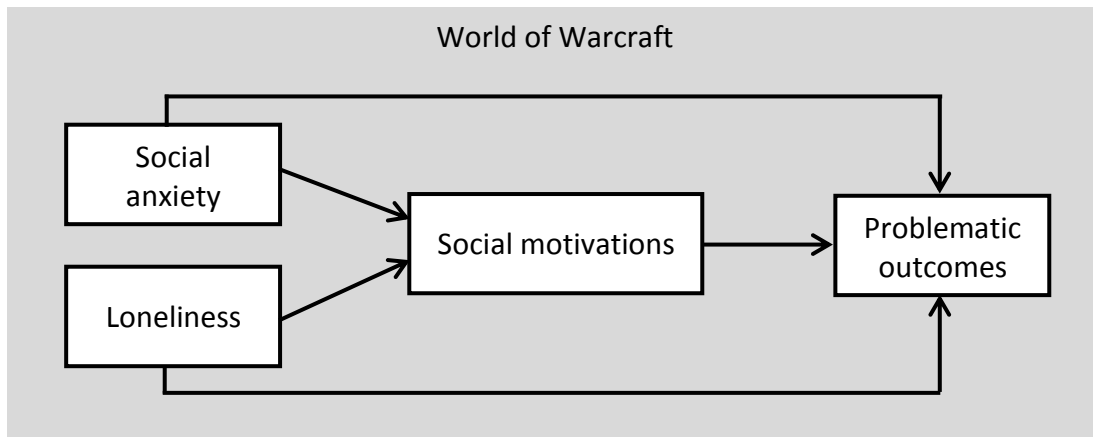
The model as tested in Table 5.19 was a moderate fit to the data when insignificant paths between demographics and psychosocial variables were set to zero ($\chi^2_{(8)}$=23.470, p.= .003; CFI=.90; RMSEA= .07 (c.i.=.04-.10); p >.12; AIC= 61.470).

A similar model for the full sample was a worse fit to the data ($\chi^2_{(8)}$=84.348, p.= .000; CFI=.79; RMSEA= .12 (c.i.=.10-.14, p=.000); AIC= 122.348).

Table 5.19: *Coefficients for social motivations path model in the high-problem sample*

			β	b
Age	--->	Loneliness	.136*	.021*
Social anxiety	--->	Social motivation	.075	.022
Social anxiety	--->	Problematic outcomes	.060	.031
Loneliness	--->	Social motivation	-.103	-.037
Loneliness	--->	Problematic outcomes	.207*	.127*
Social motivation	--->	Problematic outcomes	.136*	.231*

Base: Respondents with high levels of problematic outcomes, N=382.

* Coefficient significant, p <.01.

Table 5.20: *Standardized explanatory power of variables in the social motivations path model in the high-problem sample*

	R2	Total	Direct	Indirect
Social anxiety		.071	.060	.010
Loneliness	.018	.193	.207	-.014
Social motivation	.008	.136	.136	
Problematic outcomes	.074			

Base: Respondents with high levels of problematic outcomes, N=382.

While the model was a moderate fit to the data, the assumption that social motivations mediate the effects of social anxiety (H4e) or loneliness (H4f) on problematic outcomes was only supported by small indirect effect sizes. However, the results show that the direct effect of loneliness was significantly related to more problematic outcomes.

5.3.9. Discussion

This section sought to understand the extent to which the proposed causal processes can explain problematic outcomes of online gaming, focusing on the process involving social motivations, social anxiety and loneliness. As part of the process analysis, both moderating and mediating effects were explored. A number of significant main effects were discovered in the regression models and these will be discussed in the chapter conclusions.

The results from the regression models in section 5.3.7 show that one hypothesis was supported. Table 5.16 shows that, in the full sample, players with high levels of social anxiety and high levels of social motivation tended to experience more problematic outcomes from online gaming than those with low social anxiety (H3e). However, in the same sample, players who had no social motivations at all experienced the same amount of problematic outcomes irrespective of their level of social anxiety. For players with low social anxiety, the

level of social motivation made almost no difference. This suggests that users who have high levels of social anxiety, and thus presumably fewer offline social resources, may go online to interact socially (e.g., Morahan-Martin & Schumacher, 2000; Caplan, 2002, 2005; Caplan et al., 2009; Kneer & Glock, 2013; Lemmens et al., 2011), which leads, as part of a coping process, to problematic outcomes in the long run.

The hypothesis for loneliness was not supported (H3f) in either sample. The hypothesis for social anxiety (H3e) was not supported in the sample with high levels of problematic outcomes.

While H4e and H4f were supported by the path model, which showed a moderate fit to the data, the indirect effects were small. For loneliness, the direct effect on problematic outcomes was higher than the total effect, which indicates that social motivations slightly reduce problematic outcomes. In other words, people who are lonely and go online to interact socially with others may experience slightly fewer problematic outcomes than they would otherwise.

It is important to note that in the path model social motivation is positively correlated with problematic outcomes (Table 5.19). This is because escapism and achievement were not included in the model; when these variables are controlled for, the social motivation has a negative relationship with problematic outcomes, as evidenced by all regression models in this section. All path models in this thesis are specified, in accordance with theory, by drawing on motivations that the existing literature suggests are significant predictors of problematic outcomes. The correlation matrix included in Appendix III shows, in line with the

literature, that social motivations were positively associated with problematic outcomes, but the regression models in this chapter reveal that this is not the case for World of Warcraft players. The effect of social motivations on problematic outcomes is actually negative when escapism and achievement are controlled for. This unexpected finding posed a problem for the specification of the path model in this section, as the true relationship with problematic outcomes is hidden. This also affects the proposed sequential path between social anxiety or loneliness, social motivations and problematic outcomes. For example, the results in the path model specified in Table 5.19 show a small negative indirect effect of loneliness on problematic outcomes, indicating that those with high levels of loneliness who go online for social reasons experience slightly fewer problematic outcomes. However, a path model where escapism and achievement are also controlled for finds a moderate positive indirect effect, where those with high levels of loneliness who go online for social reasons experience more problematic outcomes. It might have been worthwhile to also control for achievement and escapism in the path models, but such a large model was a poor fit to the data.

5.4. Conclusions

The first question asked in this chapter was: Which variables from the addiction and uses and gratifications frameworks are significant predictors for problematic outcomes of online gaming when variables from both frameworks are controlled for (Q1a)?

This question challenges the dominant addiction framework, which asserts that a person's psychosocial well-being is the main causal factor for problematic outcomes of online gaming. The argument that has been presented in this thesis is that a uses and gratifications framework can be usefully combined with the addiction framework, as one theoretical

perspective may not be enough to adequately explain why problematic outcomes occur (Griffiths, 2005). The results of the comparison between the addiction framework and the uses and gratifications framework in the context of online gaming, as expressed by H1a and H2a, show that the measures of psychosocial well-being were generally not significant predictors when motivations for play were also included in the model (Q1a). Two psychosocial variables require further discussion: self-esteem was significant in the models for the full sample, but not for the high-problem sample. The tendency was for high self-esteem as a main effect, when significant, to be associated with fewer problematic outcomes and for low self-esteem to be associated with more problematic outcomes. However, as will be discussed later, when the interaction between self-esteem and escapism was controlled for self-esteem as a main effect actually had a strong positive association with more problematic outcomes. Stress had non-significant main effects across all regression models except when its interaction effect with escapism was controlled for (Table 5.3). In this case, higher stress was associated with fewer problematic outcomes, which goes against the findings of previous research that examined stress in isolation from other factors (e.g., Leung, 2007). This finding will be explained later in this section.

To conclude with a response to Q1a, these results caution that main effects of psychosocial well-being may be unreliable as predictors of problematic outcomes when examined in isolation from motivations for play, with the exception of self-esteem when applied in the full sample. However, analysing such main effects in the full sample may not be a methodologically sound approach, as not all of these players experienced a high degree of problematic outcomes. For those in the high-problem sample, self-esteem as a main effect did not explain the higher degree of problematic outcomes.

These are important findings because a large number of studies have examined various of these variables -- self-esteem, stress, social anxiety, loneliness and satisfaction with life -- in isolation and found significant correlations with problematic outcomes of online gaming. These findings have then contributed to further research and attempts at theoretical development, although with little success (Widyanto & Griffiths, 2006). The result in this chapter cautions that these correlations may only be significant by virtue of being examined in isolation from other variables. Every measure of psychosocial well-being was significantly correlated in this study with problematic outcomes of online gaming, as existing literature leads one to expect (see Appendix III), but in the regression models most of these variables lost significance (Table 5.1 and 5.2). This emphasizes the importance for researchers studying the psychosocial correlates of problematic outcomes to also control for a number of other variables that may influence the result, such as motivations for use (e.g., Katz, 1996).

Furthermore, the results show that variables from a uses and gratifications framework generally explain problematic outcomes of internet use better than variables from an addiction framework. All three motivations for online gaming were significant predictors of problematic outcomes, although the social motivation was a negative predictor, which was unexpected. This means that the occurrence of problematic outcomes cannot be fully explained by only looking at who plays online games, and that it is also important to consider why they do so (e.g., Katz, 1996; Shen & Williams, 2010; Griffiths, 2010).

Amongst the main effects reported in this chapter, being male was a significant predictor of more problematic outcomes across all regression models. This is consistent with the

literature, which states that males are more likely than females to experience problematic outcomes of online gaming (Chak & Leung, 2007; Niemz et al., 2005; Gentile, 2011; Kneer & Glock, 2013). It is unclear whether this is better explained by biological differences or by differences in play styles and motivations. The main effect of escapism was positive and significant across all regression models, except, as discussed earlier, for the one model controlling for its interaction with stress.

Achievement as a predictor of problematic outcomes was significant in all regression models, except in the samples with high levels of problematic outcomes where its interaction effect with self-esteem or satisfaction with life were controlled for. This indicates that these variables somehow interact with one another, but perhaps not strongly enough to be significant here. However, further analysis not included in this thesis showed that interaction effects between satisfaction with life and achievement were significant if mean values, rather than factor scores, were used to compute the final achievement score,. Factor scores were used to give more weight to the highest loading items. This accounts for platform-based nuances with regard to how achievement-oriented behaviour is expressed, while retaining the same items for all platforms to make the scales comparable. That the interaction effects were significant when using mean values indicates that this type of analysis is sensitive to issues in operationalization. Rather than trying to design the achievement scale to reflect nuances of achievement across platforms, it might have been better for the purpose of this thesis to compute the achievement score using mean values. Not only would this have offered significant results in line with the hypotheses, it would also have facilitated cross-comparison with other studies. The operationalization of achievement has been an issue in studies of achievement-oriented gaming where scales focusing on

different aspects of achievement have been used, sometimes with poor results (e.g., Caplan et al., 2009). However, it needs to be said that the path model found no mediation effect, irrespective of whether factor scores or mean values were used to compute the achievement scale. While moderation effects might have been supported by analysis relying on mean values, mediation effects were not.

Finally, significant negative main effects for a social motivation with problematic outcomes were found in all regression models for the full sample, but this effect was not significant in the sample with high levels of problematic outcomes. This was, on the one hand, surprising considering the heavy speculation around social motivations for online gaming and its association with problematic outcomes (e.g., Kneer & Glock, 2013; Lemmens et al., 2011; Morahan-Martin & Schumacher, 2000). On the other hand, that social motivations were negatively associated with problematic outcomes adds to the body of literature that shows social motivations to be either unproblematic (e.g., Caplan et al., 2009; Yee, 2007; Kuss et al., 2012; Collins & Freeman, 2013; Kardefelt-Winther, 2014a, 2014c) or even associated with fewer problematic outcomes (Hellström et al., 2012). This could be because social compensation allows people to stay in touch with friends or even expand their friendship circles, which can act as a buffer against more negative feelings, produce positive affect and improve social relationships through gaming (Durkin & Barber, 2002). Importantly, however, this factor was not significant for those with high levels of problematic outcomes which showed that social motivations may not act as a buffer against problematic outcomes for these players. This could be because achievement in World of Warcraft is heavily associated with social interaction, and since achievement motivations tend to lead to more problematic outcomes this cancels out the otherwise positive effect of social interaction.

The second question asked in this chapter was: should the assessment of problematic outcomes of online gaming also consider the interaction between psychosocial well-being and motivations for play (Q2a)?

This chapter has shown with a few examples of how some of these variables interact and, through their interaction, may explain problematic outcomes of internet use as a consequence of a coping behaviour taken to excess. To begin with, several of the hypothesized processes were significant for the processes involving escapism, stress and self-esteem in the sample with high levels of problematic outcomes. This supports the proposal that problematic outcomes of online gaming may be a consequence of excessive, or what some would call maladaptive, coping processes (Shiffman & Wills, 1985; Lazarus & Folkman, 1984; Folkman & Lazarus, 1991; Whang, 2003; Armstrong et al., 2000). As Folkman and Lazarus (1991) have discussed, avoidance-coping is one of the most popular ways for people to deal with stress, in particular, as it is effective in reducing through certain behaviours the distress emotions caused by stress. The results from the regression models show that the proposed causal process involving high levels of escapism, high levels of stress and low self-esteem explained the greater degree of problematic outcomes fairly well (see Figure 5.2, 5.4 and 5.5). This offers one explanation for why some people experience more problematic outcomes than others: they may be using online games to escape from high stress levels or low self-esteem. This has been suggested by several authors as a plausible explanation for problematic outcomes of internet use (e.g., Young, 1996; Armstrong et al., 2000; Whang et al., 2003; Williams et al., 2008; Lemmens et al., 2011), but so far rarely tested in research due to the lack of a uses and gratifications framework to support the analysis.

It is equally important for the second question to consider individuals who are not motivated by escapism. For example, Figures 5.4 and 5.5 shows that amongst individuals with low levels of escapism motivations, those with high self-esteem actually experience more problematic outcomes than those with low self-esteem. This relationship is similar, amongst players with high levels of problematic outcomes, for stress (Figure 5.2); amongst players who are not motivated by escapism, those with low levels of stress experience more problematic outcomes than those with high levels of stress. This result is opposite to that for players with high levels of escapism motivations, and shows the value of considering the influence of motivations for use. The findings may be explained by considering the sources of stress in individuals; if stress is related to a lack of time, then low stress means more free time and more time spent on gaming, which can lead to a higher level of problematic outcomes. As stress increases and spare time presumably decreases, less time is spent on gaming and fewer problematic outcomes follow. This says nothing about the actual impact of problematic outcomes however, and illustrates one of the key issues for studies of problematic outcomes of internet use. The actual harm of these problematic outcomes, also referred to as symptoms of an internet addiction, is unclear. It is possible that people may feel better during moments of low stress and high gaming, for example, despite a high degree of problematic outcomes.

Furthermore, the results in section 5.3.1 show that, for users who experience high levels of problematic outcomes, these outcomes are not a result of their motivation to escape if the influence of stress is absent (Table 5.3). This questions research on the association between motivations for play and problematic outcomes of online gaming (e.g., Yee, 2006; Williams et al., 2008; Kuss et al., 2012; Hellström et al., 2012; Kneer & Glock, 2013), which has posited

escapism as one of the strongest predictors for problematic outcomes. This shows the value of considering how motivations for play and psychosocial well-being interact in explaining problematic outcomes, and the utility of the combined framework.

However, it needs to be said that none of the hypothesized processes for achievement motivations were significant. This questions the proposition that achievement-oriented online gaming may be a way to cope with low satisfaction with life or low self-esteem (e.g., Caplan et al., 2009; Williams et al., 2008; Lemmens et al., 2011). The case was similar for the association between social motivations and problematic outcomes, which was not moderated by the effect of loneliness as proposed in the literature (e.g., Caplan, 2002, 2005). However, in the sample with higher levels of problematic outcomes the association was moderated by social anxiety; individuals whose motivations were social and who had high levels of social anxiety experienced more problematic outcomes. This supports the hypothesis of a process of social compensation underlying problematic outcomes of online gaming for individuals who are socially anxious (Lemmens et al., 2011).

To sum up, the findings on moderating effects presented in this chapter show the value of also considering motivations for use in the context of problematic outcomes of online gaming. This supports the argument that the outcomes of online gaming are influenced by the purposes and motivations for play, as argued by Shen and Williams (2010). Taken together, the results from this chapter support the use of a combined model as proposed in this thesis. Findings also suggest that the stress-coping model (Shiffman & Wills, 1985) may adequately explain problematic outcomes of online gaming, which supports the broader assumption in this thesis that coping processes underlie problematic use. It also responds

positively to the question of whether the addiction framework and the uses and gratifications framework should be combined in the study of problematic outcomes of online gaming (Q2a), since neither framework would capture these interaction effects on its own. These findings would not be uncovered either by an addiction or by a uses and gratifications framework applied separately. Thus, responding to the second question asked in this chapter, studies would benefit from considering the interaction between psychosocial well-being and motivations for play when exploring the processes underlying problematic outcomes of online gaming.

In line with the findings on moderating effects, the path model for escapism, stress and self-esteem showed the strongest indicator of mediating effects. This supports Folkman and Lazarus's (1988) claim that coping behaviour is a mediator of emotional states and changes the original relationship between the antecedent and the outcome variable (p. 311), and extends it to the study of problematic outcomes of online gaming. However, once again the hypotheses were only supported for escapism, stress and self-esteem. While the path model for social motivations showed that these did mediate the effect of social anxiety on problematic outcomes in accordance with the hypothesis, the indirect effect was small. Social motivation was not a mediator for loneliness, contrary to the hypothesis. Finally, the path model for achievement, while a moderate fit to the data, suggested that achievement may actually be better used as a direct predictor of problematic outcomes, perhaps because of its strong association with time spent online, as found in a number of studies (e.g., Yee, 2006; Williams et al., 2008; Kuss et al., 2012). These findings question the assumption that achievement-oriented behaviour is a way for people to compensate for low life satisfaction or low self-esteem (e.g., Wan & Chiou, 2006a; Williams et al., 2008; Leung, 2007; Lemmens

et al., 2011; Kneer & Glock, 2013). Even though achievement-oriented gaming may be related to more problematic outcomes, this could be explained by the amount of time and focus that such gaming requires. As Charlton and Danforth (2007) have suggested, it is important to take into account that problematic outcomes may occur as a natural consequence of high engagement.

Overall, the findings in this chapter are not very consistent. Most hypotheses were significant for the proposed coping processes, including escapism, stress and self-esteem, but none were significant for achievement and only one out of four for social motivations. That the section on escapism had a number of supported hypotheses is not surprising, as escapism as a concept is closely tied to avoidance-based coping and grounded in decades of research suggesting that this is a common form of coping behaviour (e.g., Lazarus & Folkman, Folkman & Lazarus, 1991). By contrast, the proposals of achievement-oriented coping in online games and of online social compensation are more recent constructs and may be less stable indicators of a real coping process and sensitive to issues in operationalization. Another explanation is that online games are not particularly well-suited to achievement-oriented coping or online social compensation; this explanation will be further explored as the analysis continues in the next chapter by considering a different platform.

6. Exploring Processes of Coping in the Context of Online Social Networking

People interacting socially, whether online or in the real world, are still people interacting socially. (Grohol, 1999, p. 398)

Social networking sites have been a less common area of study amongst researchers focusing on problematic outcomes of internet use (Kuss & Griffiths, 2011). This is curious since social networking sites are one of the most used online services (Staksrud, Olafsson & Livingstone, 2013), but may be because they are a more recent phenomenon than online gaming or gambling. However, while academic research on social network addiction may be scarce (Kuss & Griffiths, 2011), Facebook addiction in particular has received plenty of attention from major news sources such as CNN (Cohen, 2009), *Time* magazine (Webley, 2010), and *The New York Times* (Hafner, 2009).

Early research on the social uses of the internet suggested that the internet was causing people to become socially isolated and cut off from genuine social relationships. This research depicted computer users as sitting alone in front of their computers, communicating with anonymous strangers through a socially impoverished medium (e.g., Turkle, 1996). Kraut et al. (1998) argue that internet applications provide asocial entertainment that may compete with social contact as a way to spend time (p. 1017), which echoes Putnam's (1995) concern with the broad decline in social participation across the United States. Kraut et al., (1998) warn that this may be further exacerbated if the use of asocial technology increases. However, Katz and Aspden (1997) oppose these views and argue instead that the internet is "creating a nation richer in friendships and social

relationships" (p. 69). Over time, the latter view of the internet as an enabler of social interaction has become more prominent due to a lack of evidence for the view of the internet as an asocial technology (McKenna & Bargh, 2000)

Knowing what we know today, how the social uses of the internet have become fully embedded in the lives of young people (e.g., Staksrud et al., 2013; boyd, 2014), the concerns of Kraut et al. (1998) seem exaggerated. However, these debates led to important research on the quality of online social relationships and the practices of online friendship formation. For example, Joinson (1998) argues that behaviours in online environments differ from equivalent behaviours in real life. The anonymous and disinhibited nature of online communication may allow individuals to take greater risks in making disclosures to their online friends as compared with someone met offline (Joinson, 1998; McKenna & Bargh, 2000). Further, McKenna and Bargh (2000) argue that many of the situational factors that foster feelings of social anxiety are absent in certain forms of online communication. This may motivate socially anxious individuals to use the internet as a means to make social connections and satisfy social needs (McKenna & Bargh, 2000; McKenna, Green & Gleason, 2002). This is commonly referred to as the social compensation hypothesis (McKenna & Bargh, 2000), and its basic tenet is that people who are more introverted will find internet use particularly beneficial for social interaction (Peter, Valkenburg & Shouten, 2005). This hypothesis has been largely supported by research. For example, Peter et al. (2005) showed that, among introverted individuals, a stronger motivation for social compensation also led to more frequent use of the internet for online communication. Contrary to this stands the claim that only those who already have many friends offline actually benefit from the use of the internet for social communication (Kraut et al., 2002); this is commonly referred to as

the rich-get-richer hypothesis. This claim also has some support in research. For example, Peter and Valkenburg (2007) showed that socially anxious individuals, presumably with fewer offline social resources, tend to communicate online less often than those who are not socially anxious. Regardless of which argument is favoured, it is clear that the social motivations for using the internet are important for understanding its general use, and may also be useful when exploring problematic use. This thesis examines the social compensation argument in the context of problematic use of social networking sites. It suggests that the problematic outcomes of using social networking sites come about because socially anxious or lonely individuals are motivated to go online to compensate for a lack of offline social interaction, which is greatly facilitated by the social affordances of such sites.

6.1 Measures for Online Social Networking Sites

The methodology chapter (Chapter 4) presented the general literature for the concepts used in this thesis. This section will describe how these concepts have been applied in the study of social networking sites specifically.

6.1.1 Escapism

Research on escapism in relation to social networking sites is comparatively scarce. Unsurprisingly perhaps, the focus has been on the social and interactive opportunities that such sites afford, and research on motivations for using social networking sites has tended to focus on social motivations (Kuss & Griffiths, 2011). Dunne, Lawlor and Rowley (2010) suggest, on the basis of a qualitative study, that escapism may be an important motivation for using social networking sites that has so far been overlooked. This claim has been supported by Papacharissi and Mendelson (2011), who found escapism to be a key

motivation for Facebook use, mostly related to using Facebook to procrastinate and avoid tasks. In their study, escapist use of Facebook correlated highly with a number of other motivations. Companionship (an ability of the medium to simulate companionship in the absence of other channels for communication), passing time and entertainment were all associated with escapist use of Facebook. This indicates that Facebook may be used in a similar way to earlier media and lead to a convergence of traditional and new media needs. This led Papacharissi and Mendelson (2011) to speculate that it is the potential for Facebook to relieve stress or boredom that may explain instances of problematic outcomes of use. Open-ended responses from their survey supported this speculation. Finally, Kuss and Griffiths (2011), similarly to Young's (1996) suggestion regarding internet use in general, have suggested that social networking sites may be used by some people to cope with negative life events. Therefore, they argue, it appears valid to claim that there is a link between maladaptive coping strategies and problematic use of social networking sites.

6.1.2 Social motivations

Most research on the use of social networking sites in general and Facebook in particular has focused on their propensity for social interaction (e.g., Kuss & Griffiths, 2011; Kim, Kim & Nam, 2010; Subrahmanyam et al., 2008). While plenty has been written about the social motivations for Facebook use, for the purposes of this thesis the most important theory is the theory of social compensation mentioned earlier. Proponents of this model argue that people with small offline social networks, typically lonely or socially anxious individuals (McKenna & Bargh, 2000; McKenna, Green & Gleason, 2002; Valkenburg & Peter, 2007), may compensate for this by using social networking sites to gain online popularity (e.g.,

Barker, 2009; Ellison et al., 2007; Zywica & Danowski, 2008; Mehdizadeh, 2010) or as a way to compensate for lacking social skills (Peter, Valkenburg & Shouten, 2005).

6.1.3 Perceived stress

LaRose, Eastin and Gregg (2001) suggest that students use technology to obtain social support, which, it has been suggested, can serve as a buffer against stress (Cohen & Hoberman, 1983; Subhrahmanyam et al., 2008). Similarly, greater use of online communication tools such as email and chat rooms/instant messaging is related to reduced depressive symptoms (Morgan & Cotten, 2003).

6.1.4 Self-esteem

Valkenburg et al. (2006) found that higher use of social networking sites was associated with greater frequency of interaction with friends, which had positive benefits for respondents' self-esteem. Ellison, Steinfield & Lampe (2007) further showed that social capital gains via Facebook use are moderated by the level of self-esteem. This initial study by Ellison, Steinfield & Lampe (2007) showed an interaction effect between low self-esteem and Facebook use in bridging social capital. For those with low self-esteem, more intense use of Facebook resulted in a greater bridging of social capital than for those with high self-esteem. This finding was later replicated in a longitudinal follow-up study by Steinfield, Ellison and Lampe (2008). Steinfield et al. (2008) suggest that Facebook use reduces, for those with low self-esteem, the barriers to interacting with people they do not know very well, and note that a causal interpretation is supported by their results. Other researchers have suggested that individuals with lower self-esteem will attempt to compensate for this by actively engaging in online activities (Lee, Moore & Park, 2012). These activities include spending

more time on Facebook and increasing the frequency of logging on (Mehdizadeh, 2010), as well as having more Facebook Friends (Lee et al., 2012). In light of this, Kuss & Griffiths (2011) argue that the ease of establishing and maintaining social capital may be one of the reasons why people with low self-esteem use social networking sites excessively and with problematic outcomes.

6.1.5 Social anxiety

Some research suggests that socially anxious teenagers may benefit greatly from use of social networking sites, which help them to build more solid relationships with their friends (McKenna & Bargh, 2000; McKenna & Bargh, 2002; Valkenburg & Peter, 2005; Courtois et al., 2012). The argument is that affordances of social networking sites allow for a substantial reduction in uncertainty about friends and acquaintances, which positively affects the degree of self-disclosure. This in turn is imperative for friendship formation, in particular for socially anxious or socially unskilled individuals, which is consistent with the social compensation hypothesis (Peter, Valkenburg & Shouten, 2005; Valkenburg & Peter, 2007; Courtois et al., 2012). Valkenburg and Peter (2007) have further shown that socially anxious respondents perceived the internet as more valuable for intimate self-disclosure than did respondents who were less socially anxious. It may be that such compensation by socially anxious respondents, while having positive effects, also leads to problematic use. This supports the wider argument in this thesis that problematic outcomes may also have positive effects, such as allowing a person to compensate for difficult life situations.

6.1.6 Loneliness

Similarly to research on social anxiety, the social compensation hypothesis states that lonely people may be more motivated to use social networking sites to compensate for negative feelings (e.g., Peter et al., 2005; Valkenburg & Peter, 2007) and to help them build more solid relationships with friends (McKenna & Bargh, 2000). Social networking sites are assumed to facilitate this process through affordances that facilitate continuous online communication with both friends and acquaintances (Apaolaza et al., 2013).

6.2 Comparing the Addiction and the Uses and Gratifications Frameworks

As reviewed earlier, the addiction framework regards psychosocial well-being as the main causal factor in problematic outcomes of internet use while a uses and gratifications framework suggests that it is the motivations for using media that influence how people engage with them (Katz et al., 1973) and determines the outcomes of such engagements (Rosengren, 1974; Shen & Williams, 2010). In this chapter the two frameworks are combined and tested across the multiple hypotheses set out in Chapter 3. The question asked is:

Q1b: Which variables from the addiction and uses and gratifications frameworks are significant predictors of problematic outcomes of using social networking sites when variables from both frameworks are controlled for?

This question can be answered by the following hypotheses, which will be considered for all regression models in this chapter:

H1b: Psychosocial well-being will be significantly associated with problematic outcomes from using social networking sites.

H2b: Motivations for internet use will be significantly associated with problematic

outcomes from using social networking sites

A multiple regression model for the full sample with main effects of demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 6.1. This model will be used as a baseline model to which interaction effects are added in the subsequent sections for the high-problem sample and the full sample respectively.

Table 6.1: *Multiple linear regression for the full sample: main effects*

Model	Variables	β	t	Model R²
High problems				.33
	(Constant)		.454	
	Age	-.017	-.375	
	Gender (0F, 1M)	-.039	-.857	
	Social anxiety	-.178	-3.36**	
	Loneliness	.059	.939	
	Stress	.175	2.94**	
	Sat. w life	.086	1.34	
	Self-esteem	-.064	-.961	
	Social interaction	.147	3.12**	
	Escapism	.476	10.1**	

Base: Respondents with high levels of problematic outcomes, N=348.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 6.1 shows that, for the full sample, social anxiety and stress are significant predictors of problematic outcomes together with social interaction and escapism. Note that social anxiety is a negative predictor while the other three are positive (Q1b).

A post-hoc power analysis was conducted in order to ensure that the statistical power of the tests performed was adequate to detect accurately interaction effects. A sample size of of

348 and a 10 predictor variable equation was used as a baseline. The recommended effect

sizes used for this assessment followed on Cohen's (1977) recommendations; small (f_2 = .02),

medium (f_2 = .15), and large (f_2 = .35). The alpha level used was $p < .05$. The post-hoc analysis

revealed that the statistical power for this regression model was .40 for detecting a small

effect, whereas the power exceeded .99 for the detection of medium to large effect sizes

including interaction effects. Thus, significant differences for small effect sizes may be harder

to detect based on the lower power of the analysis for those sizes. If expected significant

effects are found to be non-significant, this might in some cases be explained by a lack of

statistical power.

Tests to see if the data met the assumption of collinearity indicated that multicollinearity

was not a concern for any of the variables included (Age, Tolerance = .93, VIF = 1.07; Gender,

Tolerance = .92, VIF = 1.09; Social Anxiety, Tolerance = .69, VIF = 1.44; Loneliness, Tolerance

= .49, VIF = 2.01; Stress, Tolerance = .54, VIF = 1.83; Satisfaction with life, Tolerance = .47, VIF

= 2.11; Self-esteem, Tolerance = .43, VIF = 2.32; Social interaction, Tolerance = .87, VIF =

1.11; Escapism, Tolerance = .86, VIF = 1.11).

6.3 Findings: Testing the Proposed Processes of Coping on Social Networking Sites

The intention here, like that of the previous chapter, was to examine hypotheses concerning

the interaction between psychosocial indicators and motivations for use in the high-problem

sample as well as in the full sample. However, the latter sample had a low average mean

value for problematic outcomes. Therefore it is questionable whether the sample

adequately captured the intended population of high-problem users. Analysis performed

with the high-problem sample as a base yielded regression models that explained almost no

variance in problematic outcomes, as no predictors were significant; this may have been because the problematic outcomes score had such a strong positive skew, and thus low variance. Furthermore, a path model for this sample was a poor fit to the data and the sample size was also questionable for use in multilevel modeling. Because of these issues, only the full sample of respondents is considered in this chapter. Given the problems with the high-problem sample, analysis of which yielded no significant effects, this seemed the best option.

The question asked in this section is:

Q2b: Should the assessment of problematic outcomes of using social networking sites also consider the interaction between psychosocial well-being and motivations for use?

On the basis of the literature presented and the assumptions made in this thesis, it is expected that there will be an interaction between psychosocial well-being and motivations for use, and that this should be considered when thinking about problematic outcomes of using social networking sites. This responds to the broader question asked in this thesis: whether there is an interaction between how someone feels and their reason for using different internet platforms, which could in turn explain problematic outcomes of using social networking sites as a coping behaviour.

6.3.1 Testing moderating effects: escapism, stress and self-esteem

As presented in the previous chapter, literature on escapism and the coping process suggests that stress (Shiffman & Wills, 1985) and low self-esteem are two common

precursors of escapism and avoidance-based coping behaviours. Stress and self-esteem have also been discussed earlier in this chapter in relation to use of social networking sites. According to the interdisciplinary framework used in Figure 3.1, as applied in this section, this means that high stress or low self-esteem should trigger motivations for escape via social networking sites, and that this leads to more problematic outcomes.

Stress

The assumption that some users cope with high stress through escapism, and that this is one of the processes that explain problematic outcomes of using social networking sites, can be expressed in the following hypothesis, adapted for social networking sites, from Chapter 3:

> H3g: The association between escapism and problematic outcomes of using social networking sites is moderated by stress.

Graphically this can be depicted as in Figure 6.1.

Figure 6.1: *Graphical depiction of stress and escapism as the process underlying problematic outcomes of using social networking sites*
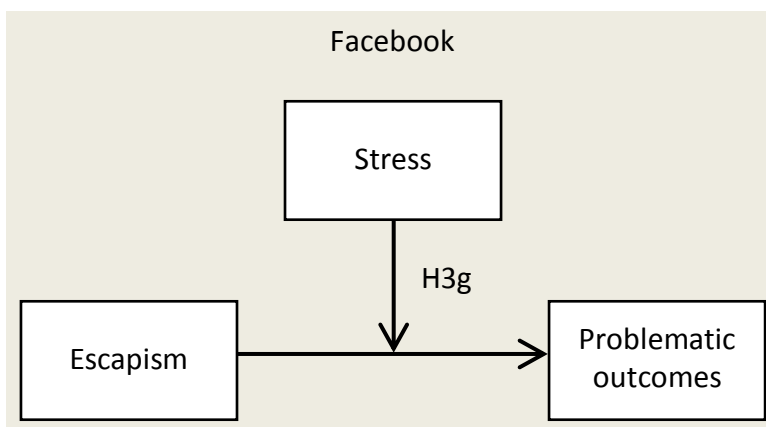
A multiple regression model was fitted to test H3g in the full sample. The regression model in Table 6.2 includes demographic variables, indicators of psychosocial well-being and motivations for use as predictors. Additionally, an interaction term between escapism and stress was included to test the assumption in H3g.

Table 6.2: *Multiple linear regression for the full sample: interaction between escapism and stress*

Model	Variables	β	t	Model R^2
Full sample				.35
	(Constant)		-.677	
	Age	-.018	-.397	
	Gender (0F, 1M)	-.040	-.866	
	Social anxiety	-.178	-3.36**	
	Loneliness	.060	.961	
	Stress	.102	.673	
	Sat. w life	.085	1.33	
	Self-esteem	-.062	-.923	
	Social motivation	.145	3.08**	
	Escapism	.398	2.56*	
	Escapism*Stress	.120	.528	

Base: Full sample of respondents, N=348.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 6.2 shows that for the full sample:

- The model explained 35% of total variance in problematic outcomes.

- Users with higher levels of social anxiety tended to experience fewer problematic outcomes and, conversely, users with lower levels of social anxiety tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience more problematic outcomes.

- Users with higher levels of escapism tended to experience more problematic outcomes.

- The interaction term between escapism and stress was not significant.

Self-esteem

The assumption that some people cope with low self-esteem via escapist use of social networking sites, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for social networking sites, from Chapter 3:

H3h: The association between escapism and problematic outcomes of using social networking sites is moderated by self-esteem.

Graphically this can be depicted as in Figure 6.2.

Figure 6.2: *Graphical depiction of self-esteem and escapism as the process underlying problematic outcomes of using social networking sites*
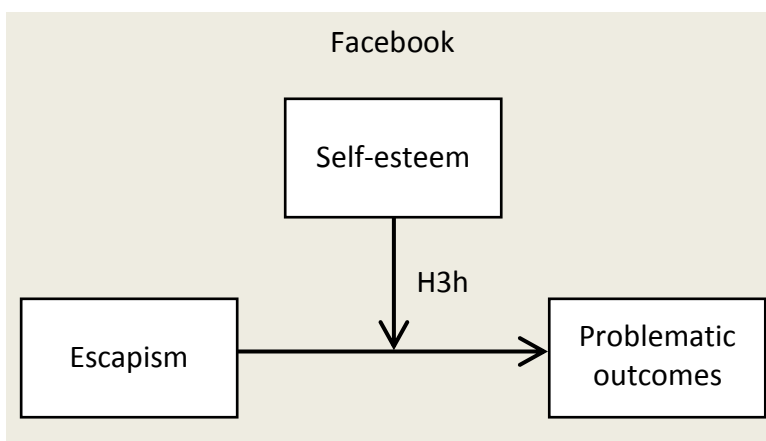
A multiple regression model was fitted to test H3h in the full sample. The regression model in Table 6.3 includes as predictors demographic variables, indicators of psychosocial well-being and motivations for use. Additionally, an interaction term between social motivations and social anxiety was included to test the assumption in H3h.

Table 6.3: *Multiple linear regression for the full sample: interaction between escapism and self-esteem*

Model	Variables	β	t	Model R^2
Full sample				.33
	(Constant)		-.189	
	Age	-.019	-.415	
	Gender (0F, 1M)	-.041	-.902	
	Social anxiety	-.183	-3.42**	
	Loneliness	.062	.991	
	Stress	.172	2.89**	
	Sat. w life	.083	1.30	
	Self-esteem	.035	.213	
	Social motivation	.144	3.04**	
	Escapism	.631	2.65**	
	Escapism*Self-esteem	-.171	-.666	

Base: Full sample of respondents, N=348.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 6.3 shows that for the full sample:

- The regression model explained 33% of total variance in problematic outcomes.

- Users with higher levels of social anxiety tended to experience fewer problematic outcomes and, conversely, users with lower levels of social anxiety tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience more problematic outcomes.

- Users with higher levels of escapism tended to experience more problematic outcomes.

- Users motivated by escapism tended to experience more problematic outcomes.

6.3.2 Testing the causal sequence: escapism, stress and self-esteem

The interdisciplinary framework in Figure 3.1 implies a causal model where low well-being motivates a person to go online and use platforms that keep negative thoughts at bay, which results in problematic outcomes.

The main question to be addressed by the path models in this section is:

Q3d: To what extent can the proposed causal processes involving escapism, stress and self-esteem explain problematic outcomes of using social networking sites?

If the assumptions in the combined framework are correct, then the effects of stress and self-esteem should be at least partially mediated by escapism. On the basis of the causal sequence presented in Figure 3.1 (see Chapter 3), as applied to this section, high stress and low self-esteem should lead to escapist use of social networking sites, which eventually leads to problematic outcomes. The model is based on the hypothesis (H4) that the association between psychosocial well-being and problematic outcomes is partly mediated by motivations for use. Partial mediation in this section will be indicated by significant indirect effects between stress or self-esteem and problematic outcomes.

The assumption that part of the effect of stress or self-esteem on problematic outcomes is partly mediated by escapism can be expressed in the following hypotheses, adapted for social networking sites, from Chapter 3:

H4g: The association between stress and problematic outcomes is partly mediated by escapism.

H4h: The association between self-esteem and problematic outcomes is partly mediated by escapism.

The model in Figure 6.3 shows the hypothesized processes underlying problematic outcomes, sequentially ordered according to the interdisciplinary framework. This chapter will fit the path model to the full sample of data, as mentioned earlier.

Figure 6.3: *Path model for escapism, stress and self-esteem on problematic outcomes*
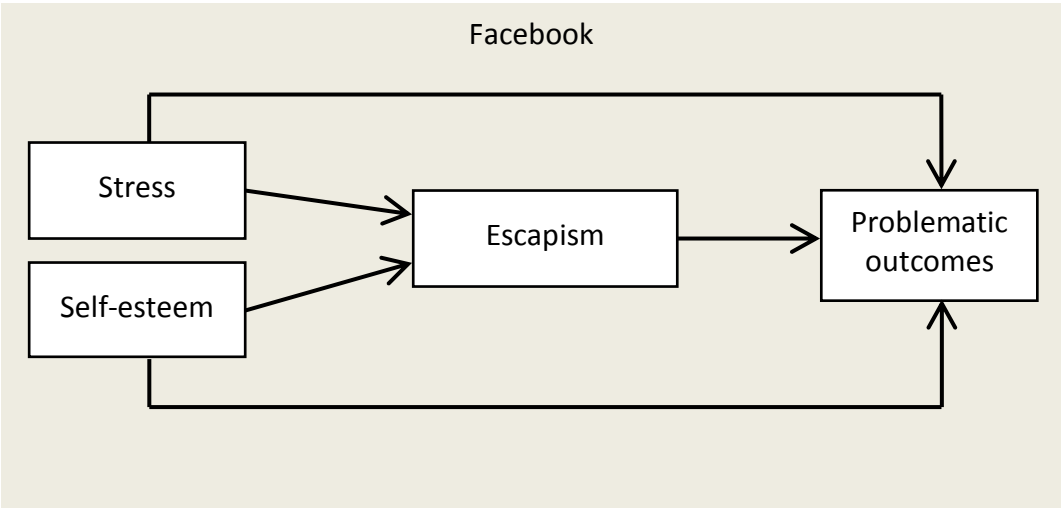
The model as tested in Table 6.4 was a good fit to the data when insignificant paths between demographics and psychosocial variables were set to zero ($\chi^2_{(9)}$=19.819, p.= .019; CFI=.96; RMSEA= .06 (c.i.=.02-.09, p=.298); AIC= 55.819).

Table 6.4: *Coefficients for escapism path model in the full sample*

			β	b
Stress	--->	Escapism	.165	.083
Stress	--->	Problematic outcomes	.145	.109
Self-esteem	--->	Escapism	-.063	-.034
Self-esteem	--->	Problematic outcomes	.044	.035
Escapism	--->	Problematic outcomes	.510*	.760*

Base: Full sample of respondents, N=348.

 * Coefficient significant, p <.01.

Table 6.5: *Standardized explanatory power of variables in the escapism path model in the full sample*

	R2	Total	Direct	Indirect
Stress		.229	145	.084
Self-esteem		.011	.044	-.032
Escapism	.044	.510	.510	
Problematic outcomes	.298			

Base: Full sample of respondents, N=348.

 The path model in Table 6.4 shows that the direct effect of stress on problematic outcomes was not significant at the p<.01 level (although the effect of stress was significant at p=.011). The path model also shows that part of the effect of stress (H4g) on problematic outcomes is indirect and mediated by escapism. In other words, stress carries its influence on problematic outcomes partly through its direct effect and partly by leading to escapism motivations. A bootstrap approximation obtained by constructing two-sided, bias-corrected

confidence intervals showed that the mediated effects of stress on problematic outcomes was significantly different from zero in this sample (p=.019, two-tailed).

Neither direct nor indirect effects of self-esteem on problematic outcomes were significant. There was no support for the assumption that escapism mediates the association between self-esteem and problematic outcomes (H4h).

6.3.3 Discussion

This section sought to understand the extent to which the proposed causal processes of coping can explain problematic outcomes of using social networking sites, focusing on part of the process involving escapism, stress and self-esteem. As part of the process analysis, both moderating and mediating effects were explored. Some significant main effects were discovered in the regression models, and these will be discussed in the chapter conclusions.

The results from the regression models in section 6.3.2 show that none of the hypothesized interaction effects were significant. It was assumed that the association between escapism and problematic outcomes would be moderated by stress (H3g) or by self-esteem (H3h), but the results did not support this. This was surprising, considering that escapism has been suggested in the literature (e.g., Papacharissi & Mendelson, 2010) as a significant predictor of problematic outcomes of internet use and that both high stress and low self-esteem are assumed to lead to escapist use of media and the internet (Katz & Foulkes, 1962; Leung, 2007; Lemmens et al., 2011). The results obtained here may indicate that the particular affordances of Facebook are not suited to escaping stressful life situations or compensating for issues with self-esteem. As far as stress is concerned, this may be because Facebook lacks

216

the immersive qualities of online gaming, film or books. In relation to self-esteem, it may be that Facebook is so strongly connected to real life that logging on does not help the user to avoid or forget self-esteem issues, but may rather remind them of their situation. This highlights the importance of investigating in detail how specific media content affords an ability to cope with particular life issues (Knobloch-Westerwick et al., 2009), as motivations and uses may be different across media sources (Sherry et al., 2006).

Mediating effects were found in the path model, which showed a good fit to the data from the full sample. There was a significant indirect effect between stress and problematic outcomes mediated by escapism (H4g). These results suggest that, while escapism may be on its own a reliable predictor of more problematic outcomes for both samples, it may also be important to consider the additive effects of stress in the context of social networking sites. The results obtained here suggest that escapism may augment the effect of stress on problematic outcomes, indicating that people who are highly stressed may experience further problems if they use Facebook for purposes of escapism. However, this effect was not strong enough to be captured by the moderation analysis. This shows tentative support for the proposal that problematic outcomes of using social networking sites may be explained as a process of coping involving stress and escapism (Q3d).

6.3.4 Testing moderating effects: social motivations, social anxiety and loneliness

As presented earlier in this chapter, a number of authors have discussed how social networking sites may be used for purposes of social enhancement or of social compensation (e.g., McKenna & Bargh, 2000; McKenna et al., 2002; Peter et al., 2005; Valkenburg & Peter, 2007; Zywica & Danowski, 2008; Orr et al., 2009). There is thus plenty of support in the

existing literature for the proposal, made in this section, that using social networking sites for purposes of social interaction may be a way for people to cope with social anxiety or loneliness.

Social anxiety

The assumption that some people cope with social anxiety through social interaction on social networking sites, and that this is one of the processes that explains problematic outcomes of use, can be expressed in the following hypothesis, adapted for social networking sites, from Chapter 3:

> H3i: The association between social motivations and problematic outcomes of using social networking sites is moderated by social anxiety.

Graphically this can be depicted as in Figure 6.4

Figure 6.4: *Graphical depiction of social anxiety and social motivations as the process underlying problematic outcomes of using social networking sites*
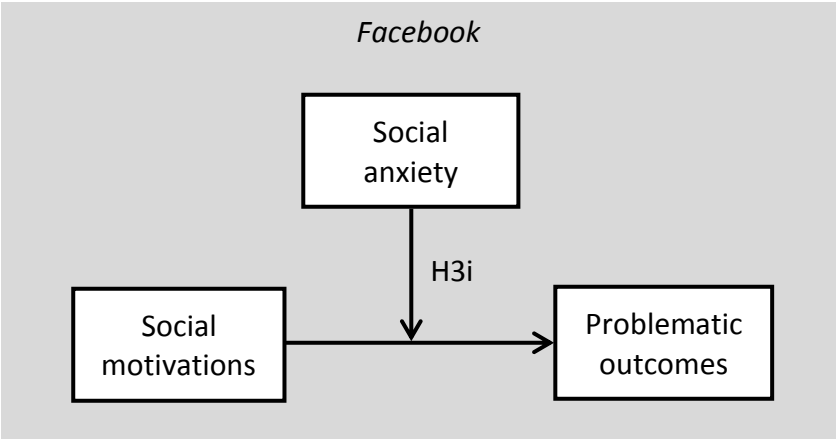
A multiple regression model was fitted to test H3i in the full sample. The regression model in Table 6.6 includes as predictors demographic variables, indicators of psychosocial well-being and motivations for use. Additionally, an interaction term between social anxiety and social motivations was included to test the assumption in H3i.

Table 6.6: *Multiple linear regression for the full sample: interaction between social motivations and social anxiety*

Model	Variables	β	t	Model R^2
Full sample				.33
	(Constant)		.313	
	Age	-.017	-.372	
	Gender (0F, 1M)	.039	-.854	
	Social anxiety	-.164	-.860	
	Loneliness	.059	.940	
	Stress	.175	2.94**	
	Sat. w life	.086	1.34	
	Self-esteem	-.065	-.962	
	Social motivation	.156	1.25	
	Escapism	.476	9.96**	
	Social mot.*Social anxiety	-.016	-.078	

Base: Full sample of respondents, N=348.

* Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 6.6 shows that for the full sample:

- The model explained 33% of total variance in problematic outcomes.

- Users with high levels of stress tended to experience more problematic outcomes and, conversely, users with low levels of stress tended to experience fewer problematic outcomes.

- Users with higher levels of escapism tended to experience more problematic outcomes.

- The interaction effect between social anxiety and social motivations was not significant.

Loneliness

The assumption that some people cope with loneliness through social interaction on social networking sites, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for social networking sites, from Chapter 3:

H3j: The association between social motivations and problematic outcomes of using social networking sites is moderated by loneliness.

Graphically this can be depicted as in Figure 6.5

Figure 6.5: *Graphical depiction of loneliness and social motivations as the process underlying problematic outcomes of using social networking sites*
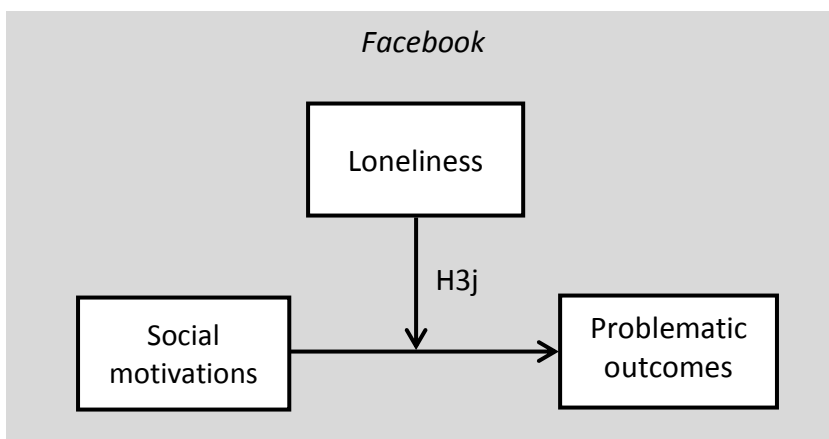
A multiple regression model was fitted to test H3j in the full sample. The regression model in Table 6.7 includes as predictors demographic variables, indicators of psychosocial well-being

and motivations for use. Additionally, an interaction term between social motivations and loneliness was included to test the assumption in H3j.

Table 6.7: *Multiple linear regression for the full sample: interaction between social motivations and loneliness*

Model	Variables	β	t	Model R^2
Full sample				.33
	(Constant)		.423	
	Age	-.084	-.397	
	Gender (0F, 1M)	.152	-.799	
	Social anxiety	-.105	-3.29**	
	Loneliness	.063	.599	
	Stress	1.55	3.05**	
	Sat. w life	-.029	1.40	
	Self-esteem	-.151	-.906	
	Escapism	.678	10.15**	
	Social motivation	-.083	2.93**	
	Social mot.*Loneliness	-.058	-1.23	

Base: Full sample of respondents, N=348.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 6.7 shows that for the full sample:

- The model explained 33% of total variance in problematic outcomes.

- Users with high levels of social anxiety tended to experience fewer problematic outcomes and, conversely, users with low levels of social anxiety tended to experience more problematic outcomes.

- Users with high levels of stress tended to experience more problematic outcomes and, conversely, users with low levels of stress tended to experience fewer problematic outcomes.

- Users with higher levels of escapism tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience fewer problematic outcomes.

- The interaction term between social motivations and loneliness was not significant.

6.3.5 Testing the causal sequence: social motivations, social anxiety and loneliness

The interdisciplinary framework in Figure 3.1 implies a causal model where low well-being motivates a person to go online and use platforms that keep negative thoughts at bay which results in problematic outcomes.

The main question to be addressed by the path models in this section is:

Q3e: To what extent can the proposed causal processes involving social motivations, social anxiety and loneliness explain problematic outcomes of using social networking sites?

The combined framework assumes that the effects of social anxiety and loneliness are partially mediated by social motivations. According to the causal sequence as presented in Figure 3.1 (see Chapter 3), as applied to this section, high social anxiety and high levels of loneliness should lead to motivations for using social networking sites for social interaction, which eventually leads to problematic outcomes. Underlying this model is the hypothesis (H4) that the association between psychosocial well-being and problematic outcomes is partly mediated by motivation for use. Partial mediation in this section will be indicated by significant indirect effects between social anxiety or loneliness and problematic outcomes.

The assumption that part of the effect of social anxiety or loneliness on problematic outcomes is partly mediated by social motivations can be expressed in the following hypotheses, adapted for social networking sites, from Chapter 3:

H4i: The association between social anxiety and problematic outcomes is partly mediated by social motivations.

H4j: The association between loneliness and problematic outcomes is partly mediated by social motivations.

The model in Figure 6.6 shows the hypothesized processes underlying problematic outcomes, sequentially ordered in accordance with the combined framework. This chapter will fit the path model to the full sample of data as mentioned earlier.

Figure 6.6: *Path model for social motivations, social anxiety and loneliness on problematic outcomes*
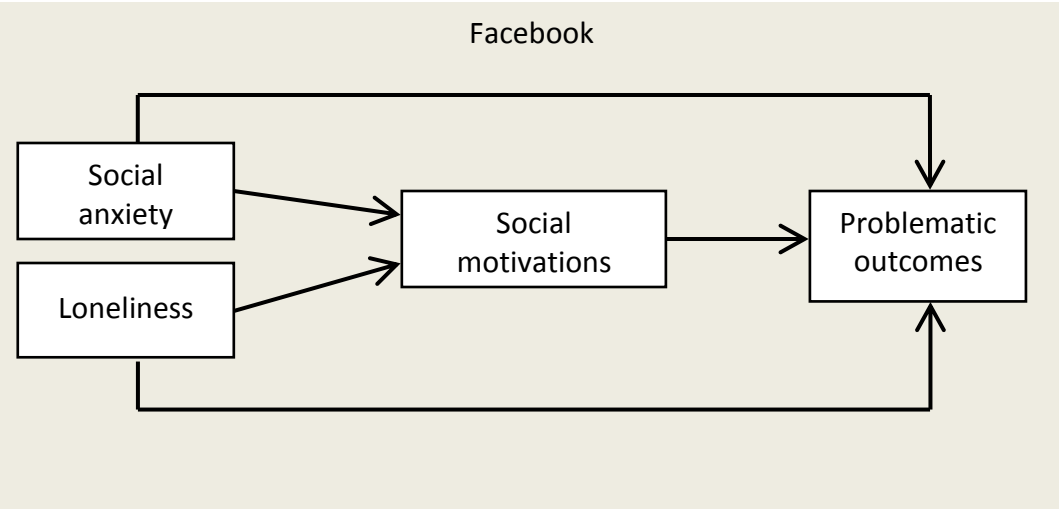
A path model for the given variables in the full sample was a moderate fit for all indicators when insignificant paths were removed ($\chi^2_{(6)}$=15.000, p.=.020; CFI=.95; RMSEA= .07 (c.i.=.02-

.10), p=.226; AIC= 57.000). It is worth noting that both demographic variables, age and gender, were significant predictors in this model.

Table 6.8: *Coefficients for social motivations path model in the full sample*

			β	b
Age	--->	Social anxiety	-.138*	-.014*
Gender	--->	Loneliness	.135*	.229*
Social anxiety	--->	Social motivations	.243*	.093*
Social anxiety	--->	Problematic outcomes	-.084	-.044
Loneliness	--->	Social motivations	-.174*	-.077*
Loneliness	--->	Problematic outcomes	.156*	.106*
Social motivations	--->	Problematic outcomes	.282**	.433*

Base: Full sample of respondents, N=348.

 * Coefficient significant, p <.01.

Table 6.9: *Standardized explanatory power of variables in the social motivations path model on problematic outcomes in the full sample*

	R2	Total	Direct	Indirect
Social anxiety	.019	-.104	-.084	-.020
Loneliness	.035	.107	.156	-.049
Social motivations	.047	.433	.168	
Problematic outcomes	.087			

Base: Full sample of respondents, N=348.

The path model in Table 6.8 shows that age had a significant negative effect on social anxiety and that gender (being male) had a significant positive effect on loneliness. Both social anxiety and loneliness had significant associations with social motivations; social anxiety was positively related and loneliness negatively related. This means that users with high levels of social anxiety are more motivated to use social networking sites for the purpose of social interaction, while those who are lonely are less motivated to do so. Furthermore, loneliness

had a negative indirect effect on problematic outcomes (H4f), while the direct effect was positive. A bootstrap approximation obtained by constructing two-sided, bias-corrected confidence intervals showed that the mediated effects of loneliness on problematic outcomes was significantly different from zero in this sample (p=.007, two-tailed).

6.3.6 Discussion

This section has sought to understand the extent to which the proposed causal processes of coping can explain problematic outcomes of using social networking sites, focusing on part of the process involving social motivations, social anxiety and loneliness. As part of the process analysis, both moderating and mediating effects were explored. Some significant main effects were discovered in the regression models, and these will be discussed in the chapter conclusions.

The results from the regression models in section 6.3.4 show that none of the hypothesized interaction effects were significant. It was assumed that the association between social motivations and problematic outcomes would be moderated by social anxiety (H3i) or loneliness (H3j). This assumption was not supported by the results. Once again this is surprising, considering the support these hypotheses had in the literature, as well as the support for the effect of individual variables on problematic outcomes of using social networking sites.

As discussed earlier, it is possible that the effect of individual variables diminished when other variables were controlled for. However, three out of five variables had no significant effects even on a correlational level (see Appendix III).

As depicted in terms of the path model in Table 6.8, there was a moderate indirect effect between loneliness and problematic outcomes mediated by social motivations. This effect shows that the association between loneliness and problematic outcomes was significant and mediated by social motivations, as expected (H4j). It seems that people who are lonely may generally experience more problematic outcomes from using social networking sites, but if they primarily use them for the purpose of social interaction the problematic outcomes are fewer.

6.4 Conclusions

The first question asked in this chapter was: which variables from the addiction and uses and gratifications frameworks are significant predictors for problematic outcomes of using social networking sites when variables from both frameworks are controlled for (Q1b)?

The results of the comparison between addiction and uses and gratifications frameworks in the context of social networking sites show that variables from a uses and gratifications framework generally explain problematic outcomes of internet use better than variables from an addiction framework. While social anxiety was a significant predictor of fewer problematic outcomes generally, the results in section 6.3 caution that loneliness, as argued by Peter et al. (2005), may not be a stable predictor of problematic outcomes in the context of social networking sites. As shown in the previous chapter in relation to World of Warcraft, however, all motivations for use were significant when other variables were controlled for (H2b). Overall, the results in section 6.2 show that variables concerned with motivations for use should be considered in the study of problematic outcomes of using social networking sites, which validates the recommendations of Peter et al. (2005).

226

In the regression models for the full sample (Table 6.3, 6.6, 6.7), the main effect of stress was a significant positive predictor of more problematic outcomes in all regression models except the one where its interaction with escapism was controlled for. Furthermore, the path models showed that the effect of stress on problematic outcomes was partially mediated by escapism; both direct and indirect effects were significant. This suggests that whether or not a person experiences problematic outcomes depends both on how stressed they are and on their purposes in using social networking sites; if these purposes are escapist in nature then problematic outcomes may increase further. However, no moderating effects were found to support this. This means that it remains unclear whether escapism on social networking sites is a problem on its own, or whether this depends on underlying psychosocial issues. No conclusions can be drawn from this chapter about how the interaction between stress and escapism predicts problematic outcomes.

The main effect of social anxiety was significant in the regression model for the full sample when its interaction with social motivations was not controlled for. These results show that people who are more socially anxious tend to experience fewer problematic outcomes from using social networking sites. On the one hand this is surprising, as the literature suggests that socially anxious individuals may use social networking sites to compensate for their lack of social skills or offline social resources (e.g., Valkenburg & Peter, 2007; Peter et al., 2005). From a perspective of coping, it would have made sense if social anxiety was associated with more problematic outcomes or if it moderated the association between social motivations and problematic outcomes. On the other hand, some authors have argued that socially anxious individuals benefit greatly from using social networking sites (e.g., Courtois et al., 2012); it is possible that increased well-being therefore leads to fewer problematic

outcomes. Another explanation is that not all individuals who lack social skills use social networking sites for social compensation.

The second question asked in this chapter, whether the assessment of problematic outcomes of using social networking sites should also consider the interaction between psychosocial well-being and motivations for use (Q2b), requires a mixed response. Overall, none of the hypothesized processes for social motivations were significant. This was surprising since theories of social compensation have support in the literature on online social interaction and the use of social networking sites (e.g., Valkenburg & Peter, 2007; Peter et al., 2005; Courtois, 2012; Barker, 2009; Ellison et al., 2007; Zywica & Danowski, 2008; Mehdizadeh, 2010). The results in this chapter suggest that problematic outcomes of using social networking sites are not explained by the interaction between social anxiety or loneliness and social interaction. However, one limitation of the data analysed in this chapter may have been the difficulty of determining what, exactly, the social motivations for Facebook use are. Facebook is an inherently social platform and therefore, arguably, everything people do on Facebook may ultimately be grounded in social motivations. It is possible that the operationalization of social motivations did not fit the platform particularly well. The measurements, which were based on uses and gratifications theory, may not have taken into account the particular affordances of Facebook. Arguably, Facebook, with its wide reach and global use, may represent a new form of online social interaction which uses and gratification measurements cannot yet fully capture. This emphasizes the need to continually update a uses and gratifications framework to fit new media sources (e.g., Flanagin & Metzger, 2001; Sherry et al., 2006).

The path models in this chapter were overall a fairly good fit to the data. The theorized path between stress, escapism and problematic outcomes showed a good fit and was significant for the full sample. This suggests that the total effect of escapism on problematic outcomes of using social networking sites is also influenced by stress and that additive effects need to be considered. It indicates some support for the proposition that escapist use of social networking sites may be a coping behaviour intended to deal with high levels of stress, and that this leads to problematic outcomes (e.g., Papacharissi & Mendelson, 2010), although this was not supported by the regression models.

A path model specified for the full sample found support for social motivations as a mediator between loneliness and problematic outcomes, although it was only a moderate fit to the data. These results suggest that users with high levels of loneliness tend to experience more problematic outcomes from using social networking sites, but that they experience less problematic outcomes if they go online for purposes of social interaction. This may be because people who are lonely have fewer social resources and therefore are at less risk of spending too much time on social networking sites, which reduces the potential for problematic outcomes. The results support those of Peter et al., (2005), who urged researchers to "revisit the positive direct effects of loneliness on the social uses of the internet and include motives for internet use as additional explanatory variables" (p. 429). Peter et al., (2005) predicted, on the basis of their research, that the direct effects of loneliness would be mediated by motives for internet use which might also change the direction of the effect. This is reflected in the results reported in this section. While the results go against the general hypothesis in this thesis about problematic outcomes, this may be because the analysis was carried out on the full sample, where the average problematic

outcomes score was low. These findings also support Davis' (2001) cognitive-behavioural model of problematic internet use, which states that people who are lonely may experience more positive feelings when online as compared with offline. Caplan (2003, 2005) refers to this as a maladaptive cognitive symptom which causes people to spend more time online, resulting in problematic outcomes. This interpretation indicates some support for the proposal that processes of coping involving social motivations and loneliness may explain problematic outcomes of using social networking sites (Q3e).

The findings in this chapter do not provide solid support to the proposal that processes of coping may underlie problematic outcomes of internet use, in the context of social networking sites. While the results from the path models on mediating effects are promising, the moderation analysis supports none of the hypotheses. Considering the literature which supports a theory of social compensation via internet use and, specifically, social networking sites, this result is surprising. Some limitations regarding the operationalization of social motivations and its relevance to Facebook have already been discussed. Another issue for the results reported in this chapter may have been that the Facebook sample was relatively small (N=348), with low variance in the dependent variable. The sampling may not have successfully captured individuals who use social networking sites for coping behaviour; the low average levels of problematic outcomes may be an indicator of this (M=2.2).

7. Exploring Processes of Coping in the Context of Online Gambling

Even if gambling were altogether an evil, still on account of the very large number of people who play, it would seem to be a natural evil… Thus it is not absurd for me to discuss gambling, not in order to praise it, but in order to point out the advantages in it, and, of course, also its disadvantages, so they may be reduced to a minimum.

-                                - Geralamo Cardano, *Liber Ludo Aleae*, circa 1530

Gambling, in some form, has existed in all human cultures, at all times, attracting wide participation from people of all societies and social strata (Bolen & Boyd, 1968). Despite its ubiquity, the aphorism "you can legalize gambling, but you can never make it legitimate" hints at a general disapproval of gambling. As Bolen (1976) comments, at best gambling is viewed as a minor vice, while the moralist considers it pure sin. The anthropologist Devereux (1968) once said that "gambling, like prostitution is ancient, widespread, and widely disapproved [of]". Predictably, most of the professional literature on gambling has come to ignore the fact that it appears to be a natural part of human behaviour and rather focused on its negative effects (Campbell, 1976). A classic example of this is the influential psychoanalyst Bergler, who contended that, since the odds against winning are great, people must gamble in order to punish themselves for something (1957). Another example is Freud (1961), who diagnosed gambling as an anally fixated neurosis. However, as Campbell notes, Bergler and Freud, who studied gambling from a psychoanalytical perspective, produced deeply flawed studies because they did not personally know many gamblers, were not particularly familiar with gambling themselves, or possessed cultural and emotional biases of

which they were largely unaware (p. 218). Her opinion is supported by renowned gambling scholar Henry Lesieur (1979), who claims that Freud's and Bergler's descriptions were completely alien to the gamblers he spoke to, who were all "amazed at the lack of understanding of gambling and the gambling world that this model implied" (p. 79).

In opposition to the predominant scholarly view of gambling as a deviant behaviour stands David Hayano's (1983) acclaimed auto-ethnography of professional poker players in Nevada card rooms during the 1970s. Prior to his four-year dive into the world of professional poker, little ethnographic work had been done on casino culture in general or poker culture in particular. Hayano simultaneously played and observed other players at all hours of the day and night, often for fifteen- to twenty-hour stretches (Hayano, 1983, p. 150). He writes that:

> to my students at the university I sometimes appeared to be 'tired', as if I had been up all night. Spending vacation time with gambling friends often meant sleeping for a few hours in the late morning, driving to the racetrack in the afternoon, and rushing back to the cardroom in the evening. Many full-time gamblers, I discovered, did little else besides sleep, eat, and check out the available action at the racetrack or poker club. (p. 150)

However, despite his extensive involvement in poker playing and interaction with other equally involved players, and even despite his observation of the resulting financial difficulties for some players, Hayano never describes gambling in terms of compulsion or addiction.

Findings by researchers like Campbell and Hayano, who suggest that extensive gambling fulfills many important purposes in people's lives, leading to mostly beneficial outcomes,

stand in stark contrast to the early psychoanalytic literature. At the same time, problematic outcomes such as lack of sleep or neglect of professional career opportunities seem to be rather frequent within serious gambling cultures, although framed by gamblers as a choice and a necessary evil rather than as symptomatic of an addiction. This chapter will take a middle way, acknowledging both positive and problematic outcomes of gambling. In doing so, it engages with Campbell's and Hayano's broader narrative, which seeks to understand what gambling can do *for* people, rather than what it does *to* them. Positive and negative aspects are not mutually exclusive, and so it seems worthwhile to understand the motivations for extensive gambling that sometimes lead to problematic outcomes, rather than to say this is the result of pathology. Not to do so ignores the large body of literature showing that gamblers actually play of their own free will and are able to give good reasons for doing so. Problematic consequences may follow from their extensive involvement, but in a gambling culture this seems to be perceived as a matter of priority, not pathology.

As long ago as the 16th century, Cardano is known to have prescribed gambling as a remedy for melancholy, noting that it lightened cares that would not otherwise be endurable, and that "play may be beneficial in times of grief". This chapter seeks to extend this view through a quantitative approach and to build on the body of literature conceptualizing problem gambling as a way to deal with problematic life situations. Campbell (1976) has put forward the assumption that what gambling, and online poker specifically, does *for* people is to help them alleviate problematic life situations or negative feelings. This view may allow us to understand the extensive involvement with online poker and its benefits, while also recognizing the problematic outcomes.

7.1 Measures for Online Poker

The methodology chapter (Chapter 4) presented the general literature for the concepts used in this thesis. This section will describe how these concepts have been applied in the study of online poker specifically.

7.1.1 Escapism

Early studies by Blaszczynski, Wilson and McConaghy (1986) and Lesieur (1979) showed that pathological gamblers report an increase in their involvement with gambling during moments of stress or anxiety, as a means of narrowing their attention away from awareness of these disturbing life situations. This provided a basis for more recent studies showing that young problem gamblers gamble as a means of coping with stress, avoiding or escaping life problems or alleviating boredom (e.g., Nower, Derevensky & Gupta, 2004; Wood, Gupta, Derevensky & Griffiths, 2004), and similar findings have been reported for adults (e.g., Getty, Watson & Frisch, 2000; Gupta & Derevensky, 1998; Powell, Hardoon, Derevensky & Gupta, 1999).

In terms of etiology, Jacob's general theory of addictions (1986), which includes problem gambling, proposes that gambling is a common dissociative phenomenon that helps players escape from psychological distress. He suggests that it is the need to escape that both initiates and drives the addictive behaviour. In support of this, Wood and Griffiths (2007) found, in a qualitative study with adult problem gamblers, that escape was often given as the central reason for continuing to gamble despite the realization that further gambling would not solve the long-term problems. Rather than gambling to win back money lost, these gamblers reported playing for the experience itself and the dissociative states that

came with it. Similar statements were reported by some individuals in Hayano's (1983) ethnographic work. However, because gambling allows players to temporarily escape from their problems, and gambling also sometimes exacerbates these problems through financial losses, the need to gamble may continually increase in a vicious cycle. Therefore, due to the financial stakes, what may have started as an escapist coping strategy can turn into a problem in its own right as participants start chasing their losses to win their money back. Hayano (1983) contends that chasing has little to do with addiction, however, and emphasizes that the primary reason for chasing seems to be to ensure that the player can maintain his gambling. Severe losses, Hayano says, can sometimes be made up only by continued gambling and not by any other legitimate means (p. 105). A professional poker player in Hayano's study claims that: "I can't afford to work. What would I do if I did? Make three bucks an hour? I'd have to work 200 years just to get even for the last month". While the gambling may function as a coping strategy, the primary threat perceived by the individual is not a loss of money, resulting in unpaid bills, but rather the inability to continue with the coping strategy. While little research has been done on online poker players specifically, Wood et al. (2007b) found that playing online poker to escape from problems was a key predictor of problematic outcomes.

7.1.2 Achievement

Hayano (1983) reports that improving as a poker player has many qualitative benefits in addition to the obvious financial gain. He mentions that a good poker player enjoys a higher status in the casino, which comes with social and financial benefits; for example, an individual with a reputation as a skilled player will find it easier to borrow money from others in order to continue playing. He also mentions that, for some players, the "rush"

experienced from beating other players is the main reason for playing. This last point may also be applicable to online poker.

Important for this chapter is the fact that achievement has been identified as having an emotion-altering effect amongst self-defined problem gamblers. A qualitative study by Ricketts and Macaskill (2003) showed that all gamblers who reported criminal behaviour to fund gambling also reported achievement as an emotion-management aspect of their behaviour. This effect contributes to the increased arousal that reportedly serves to maintain problematic gambling behaviour (Ricketts & Macaskill, 2003). Ricketts and Macaskill (2003) found that those with high levels of achievement motivations and low tolerance of negative emotional states reported shortened periods of time between bouts of gambling, as compared with those with a higher tolerance of negative states. In other words, it seems that certain gamblers repeatedly seek the stimulation that their achievements from gambling provide, which could lead to more problematic outcomes due to the high frequency of play.

7.1.3 Social interaction

Social interaction appears to be an important reward and incentive for gambling (Campbell, 1976; Hayano, 1983). Rosecrance (1986, 1988) found that habitual horse players persisted in the activity partly because of the rewards of social interaction. An important aspect of social interaction in gambling communities appears to be the formation of subcultures and social support. Ocean and Smith (1993) have suggested that the adversarial relationship between players and the "house", together with cooperation amongst players, helps to facilitate group affiliation and emotional support mechanisms. Hayano found that poker players

formed a subcultural core that fostered friendly social interaction (1983), which in itself

offered an incentive for play. Similarly, casino play has been theorized as an inherently social

activity and an arena for social rewards and support (Ocean & Smith, 1993). This posits the

gambling environment as a place where self-esteem and social status can be enhanced. The

outside world, by comparison, does not offer the same social support or status-enhancing

capabilities, which could be one reason why gamblers show symptoms of restlessness and

irritability when they are unable to gamble. However, traditional forms of gambling such as

horse-race or casino play may be different from online poker in terms of social aspects. Early

studies by Griffiths and Parke (2002) suggest that online poker is an asocial activity. They

suggest that this may lower the risk for those involved, since gambling with friends tends to

increase the level of risk-taking and the length and frequency of gambling. A later study by

Wood, Griffiths and Parke (2007) takes the opposite stance, concluding that online poker

appears to be an important social activity, at least for students; 62% of their sample claimed

that they had started playing through an introduction to the game by friends. However, only

10% of online poker players in their self-selected student sample reported playing for the

purpose of social interaction, compared with 52% for excitement and 56% to win money.

7.1.4 Perceived stress

There is a substantial body of literature linking stress to pathological gambling, probably

because the notion of gambling as an emotional escape mechanism or coping behaviour for

stress is well documented (Wood & Griffiths, 2007). Important to note is that problem

gambling is often followed by a worsening financial situation. This may lead to more stress,

which calls for more gambling, which further exacerbates the financial problems, leading to

more stress and even more gambling. This makes the relationship between stress and escapism a particularly important focus in the study of problem gamblers.

Lesieur and Klein (1987) showed that increased stress was associated with more gambling in a sample of Americans. Later, Marget, Gupta and Deverensky (1999), as well as Nower, Derevensky and Gupta (2004), reported that adolescent problem gamblers in their studies seemed to employ maladaptive coping strategies, such as gambling, to deal with stress. However, following up on Hayano's observations (1983), these coping strategies may only be "maladaptive" insofar as the individual loses too much money, or money that needed to be spent elsewhere. Hayano (1983) and Campbell (1976) have both noted that many gamblers spend amounts of money appropriate for them on gambling because it makes them feel good. Indeed, findings by Wood et al. (2004), as well as by Scannell et al. (2000), showed that problem gamblers reported a higher level of relaxation, dissociation and feelings of escape while gambling. This result supports the argument made by Hayano, Campbell, and later by Lin et al. (2010), that gambling may have many positive outcomes as a form of entertainment. However, positive and negative consequences are not mutually exclusive and the fact that some people use gambling as a way to escape stress may also lead to problematic outcomes (Wood & Griffiths, 2007).

Continuing studies of gambling as a coping behaviour have shown how some players effectively use gambling to manage stress when other forms of coping are inadequate (Blaszynski & Nower, 2002). This line of thought is supported by a number of other studies (e.g., Raylu & Oei, 2002; Ferris, Wynne & Single, 1999; Friedland, Keinan & Regev, 1992). Further, Wood and Griffiths (2007) reported that participants in their qualitative study

mentioned that they would gamble most heavily when they were experiencing some kind of problem, conflict or stress in their lives. In the context of online poker playing specifically, Hopley and Nicki (2010) found, in a quantitative study, that stress was a strong predictor of higher problem-gambling scores.

7.1.5 Self-esteem

Low self-esteem also fits as an antecedent in a proposed model where gambling is used as an emotional escape mechanism. Hayano (1983) writes that, for professional poker players, part of the allure is that your status in the casino depends on how well you perform at the table, irrespective of your status outside the casino. This provides an opportunity for people with low-status jobs or from ethnic minorities to "be somebody" in the casino, where people are judged on their skills and therefore valued on an equal basis. However, Ocean and Smith (1993) have suggested that this social support may indeed give a boost to self-esteem, but may also encourage gamblers to continue gambling despite heavy losses -- a potential issue also mentioned by Hayano (1983). It is unclear whether this tendency persists in online poker rooms, where the question of social support has not yet been explored.

Further, Campbell notes how older male players often manage to improve their finances slightly by gambling, and through this increase their self-esteem (1976). She also notes that, for many gamblers, gambling provides an opportunity to participate in a decision-making process, which is often denied them at work or in the home. In particular, people who have meaningless or mundane jobs where they exert little power or influence may gamble as an outlet. This exertion of influence could improve self-esteem temporarily. On the negative side, there has been some speculation that if a gambler primarily gambles for the elevation

of self-esteem, this may accelerate the gambling and eventually lead to problems (Lesieur & Heineman, 1988). This thought is echoed by Cotte (1997), who argues that hedonic motives such as self-esteem enhancement are often found in problem gamblers. In a more recent study of pathological gambling in Estonia, Kaare, Mõttus and Konstabel (2009) found that pathological gamblers had significantly lower self-esteem than a control group. However, the direction of this correlation is unclear and the authors approached low self-esteem as a consequence of gambling rather than as a cause.

7.1.6 Loneliness

Research suggests that social aspects of gambling are important both as a motivation for play and as a possible precursor of gambling problems. Hayano (1983) mentions that the casino becomes a gathering place in particular for older players, who seem to enjoy it as a way of socializing. This could be a way to avoid loneliness and boredom. Campbell (1976) reports similar tendencies in her observations of older gamblers who spend most of their spare time at casinos for recreational purposes rather than for the actual gambling.

7.1.7 Social anxiety

Social anxiety has been suggested by some researchers (e.g., Blaszczynski, McConaghy & Frankova, 1990; Specker et al., 1996; Boughton & Falenchuk, 2007) as a predictor of problem gambling. Specker et al. (1996) argued that this may be the case because problem gamblers, especially female problem gamblers, often exhibit avoidant behaviours and strong feelings of social discomfort. However, this proposal was not supported by their study. There seems to be a lack of clarity in the literature on whether or not social anxiety is related to problematic outcomes of gambling.

7.1.8 Satisfaction with life

Campbell (1976) speculates that the gambling scene may provide "an entire reason for being", in particular for older players. The social and entertaining nature of gambling may allow older people to temporarily feel alive and involved, with many possibilities and victories ahead (1976, p. 223). She suggests that these are not inconsiderable factors in a culture where people are excluded from productive life before their capabilities are gone. Porter et al. (2004) state that general life dissatisfaction is one of the primary reasons for depressive states and boredom, which are two important risk factors for the development of problem gambling. They speculate that those who are less satisfied with life may therefore be at higher risk of problem gambling. This connection has been suggested in relation to many other problem behaviours, but there are few studies of how satisfaction with life relates to problem gambling specifically, and so far results have been inconclusive. For example, Ohtsuka et al. (1997) found that self-reported unhappiness was a significant predictor of gambling problems, while Kusyszyn (1985) suggests that male college students who gamble are generally more satisfied with life than their non-gambling counterparts. However, Kusyszyn did not focus on problem gambling specifically. Finally, Winslow (2002) found no difference in reported life satisfaction between non-gamblers, non-problem gamblers and problem gamblers. This same result was reported by Porter et al. (2004) for male gamblers, but they found that female problem gamblers were generally less satisfied with life than female recreational gamblers.

It is also possible that different forms of gambling have different impacts on life satisfaction. Lin et al. (2010) showed that playing electronic gaming machines -- a popular form of gambling in bars and casinos -- was associated with lower satisfaction with life. This was

typically related to a high loss-to-income ratio. However, Lin et al. (2010) also mention that other forms of gambling such as at the race-track have shown positive effects on life satisfaction. They explained this contradiction, having looked at the mean age and income of electronic gaming-machine gamblers and race-track gamblers, by their findings that race-track gamblers typically had a higher mean income and age (i.e. they were often retired), which would explain the positive association with life satisfaction. Importantly, their study concludes that, while a majority of people were less satisfied because of gambling, it also seemed that some people would be less satisfied with life if there was no gambling available.

7.2 Comparing the Addiction and the Uses and Gratifications Frameworks

As reviewed earlier, the addiction framework considers psychosocial well-being to be the main causal factor for problematic outcomes of internet use. A uses and gratifications framework suggests that it is the uses, gratifications and motivations for media use that influences how people engage with media (Katz et al. 1973) and determine the outcomes of such engagement (Rosengren, 1974). In this chapter the two frameworks are combined and tested across the multiple hypotheses set out in Chapter 3. The question asked is:

Q1c: Which variables from the addiction and uses and gratifications frameworks are significant predictors for problematic outcomes of online gaming when variables from both frameworks are controlled for?

This question can be answered by the following hypotheses, which will be considered for all regression models in this chapter:

H1c: Individuals with low psychosocial well-being will be significantly associated with problematic outcomes from playing online poker.

H2c: Motivations for internet use will be significantly associated with problematic outcomes from playing online poker.

A multiple regression model for the full sample with main effects of demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 7.1. This model will be used as a baseline model to which interaction effects are added in the subsequent sections for the high-problem sample and the full sample respectively.

Table 7.1: *Multiple linear regression for users with high levels of problematic outcomes: main effects*

Model	Variables	β	t	Model R²
High problems				.15
	(Constant)		4.67**	
	Age	-.114	-1.82	
	Gender (0F, 1M)	.073	1.25	
	Social anxiety	-.059	-.842	
	Loneliness	.000	.002	
	Stress	-.046	-.580	
	Sat. w life	-.123	-1.52	
	Self-esteem	-.084	-1.06	
	Social interaction	.023	.705	
	Achievement	.067	1.07	
	Entertainment	-.234	-3.61**	
	Escapism	.374	5.32**	

Base: Respondents with high levels of problematic outcomes, N=266.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

The model in Table 7.1 shows that, in the high-problem sample, no indicators of psychosocial well-being are significant when motivations for play are also controlled for, while motivations for entertainment and escapism are both significant (Q1c).

A second regression model for the full sample with main effects of demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 7.2. This model will be used as a baseline model for the full sample to which interaction effects are added in the subsequent sections.

Table 7.2: *Multiple linear regression for the full sample: main effects*

Model	Variables	β	t	Model R^2
Full sample				.34
	(Constant)		1.30	
	Age	-.067	-1.75	
	Gender (0F, 1M)	.058	1.61	
	Social anxiety	.024	.562	
	Loneliness	.090	1.92	
	Stress	-.044	-.861	
	Sat. w life	.029	.555	
	Self-esteem	-.055	-1.06	
	Social interaction	.044	1.13	
	Achievement	.126	3.25**	
	Entertainment	-.249	-6.37**	
	Escapism	.522	11.9**	

Base: Full sample of respondents, N=502.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

The model in Table 7.2 shows that, for the full sample, no indicators of psychosocial well-being are significant when motivations for play are also controlled for, while motivations for achievement, entertainment and escapism are all significant (Q1c).

A post-hoc power analysis was conducted in order to ensure that the statistical power of the tests performed was adequate to detect accurately interaction effects. A sample size of 266 was used for the statistical power analyses for the high-problem sample with a 12 predictor variable equation as a baseline. The recommended effect sizes used for this assessment followed on Cohen's (1977) recommendations; small (f_2 = .02), medium (f_2 = .15), and large (f_2 = .35). The alpha level used was $p < .05$. The post-hoc analysis revealed that the statistical power for this regression model was .26 for detecting a small effect, whereas the power exceeded .99 for the detection o medium to large effect sizes including interaction effects. Thus, significant differences for small effect sizes may be harder to detect based on the lower power of the analysis for those sizes. If expected significant effects are found to be non-significant, this might in some cases be explained by a lack of statistical power.

Tests to see if the data met the assumption of collinearity indicated that multicollinearity was not a concern for any of the variables included (Age, Tolerance = .86, VIF = 1.11; Gender, Tolerance = .97, VIF = 1.02; Social Anxiety, Tolerance = .72, VIF = 1.38; Loneliness, Tolerance = .58, VIF = 1.69; Stress, Tolerance = .48, VIF = 2.07; Satisfaction with life, Tolerance = .46, VIF = 2.15; Self-esteem, Tolerance = .47, VIF = 2.08; Social interaction, Tolerance = .85, VIF = 1.16; Achievement, Tolerance = .85, VIF = 1.11; Escapism, Tolerance = .67, VIF = 1.49; Entertainment, Tolerance = .83, VIF = 1.11).

7.3 Findings: Testing the Proposed Processes of Coping in Online Poker

In this section hypotheses regarding the interaction between psychosocial indicators and motivations for use will be tested in the sample with high levels and problematic outcomes and in the full sample. Each model focuses on the relationship between a particular indicator

of psychosocial well-being and the motivation this is assumed, on the basis of the existing literature, to trigger.

The question asked in this section is:

Q2c: Should the assessment of problematic outcomes of playing online poker also consider the interaction between psychosocial well-being and motivations for use?

On the basis of the literature reviewed so far and the assumptions made in this thesis, it is expected that there will be an interaction between psychosocial well-being and motivations for use, and that this should be considered when thinking about problematic outcomes of playing online poker. This responds to the broader question asked in this thesis: whether there is an interaction between how someone feels and their reason for using certain platforms, and whether this relationship explains problematic outcomes. If this is the case, the problematic outcomes can be explained as a consequence of a coping behaviour.

7.3.1 Testing moderating effects: escapism, stress and self-esteemOne aspect of the uses and gratifications framework assumes that people use media to escape from negative life feelings or dysphoric moods (Katz & Foulkes, 1962). At the same time, literature on escapism and the coping process suggests that stress (Shiffman & Wills, 1985) and low self-esteem are associated with escapism and avoidance-based coping behaviours. According to the combined framework depicted in Figure 3.1, as applied in this section, this means that high stress or low self-esteem should trigger a motivation for escape through playing online poker, and that this is associated with more problematic outcomes.

Stress

The assumption that some people cope with high stress through escapist online poker playing, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online poker, from Chapter 3:

H3k: The association between escapism and problematic outcomes of playing online poker is moderated by stress.

Graphically this can be depicted as in Figure 7.1.

Figure 7.1: *Graphical depiction of stress and escapism as the process underlying problematic outcomes of playing online poker*
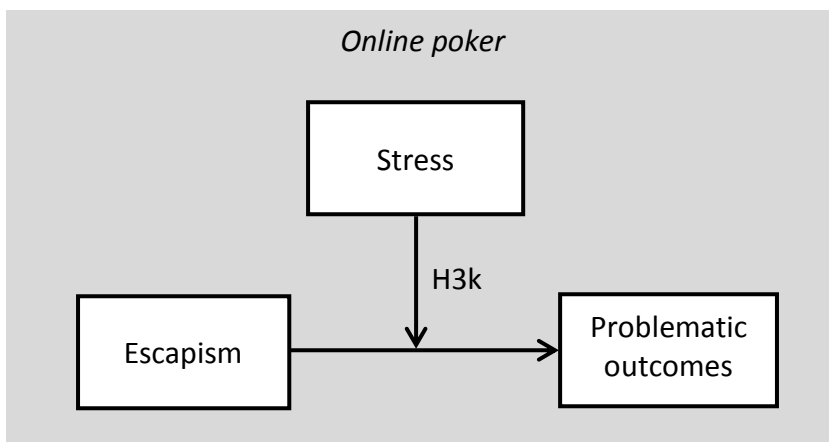
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 7.3. Additionally, an interaction term between escapism and stress was included to test the assumption in H3k. The samples are divided for all regression models in this chapter to test the hypotheses both in the high-problem sample and the full sample.

Table 7.3: *Multiple linear regression for users with high levels of problematic outcomes: interaction between escapism and stress*

Model	Variables	β	t	Model R^2
High problems				.21
	(Constant)		4.99**	
	Age	-.126	-2.019*	
	Gender (0F, 1M)	.061	1.03	
	Social anxiety	-.068	-.979	
	Loneliness	.016	.220	
	Stress	-.557	-2.15*	
	Sat. w life	-.120	-1.50	
	Self-esteem	-.080	-1.02	
	Social interaction	.043	.708	
	Achievement	.076	1.24	
	Entertainment	-.231	-3.59**	
	Escapism	-.083	-.361	
	Escapism*Stress	.808	2.08*	

Base: Respondents with high levels of problematic outcomes, N=266.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.3 shows that for users with high levels of problematic outcomes:

- The regression model explained 21% of total variance in problematic outcomes.

- Age was negatively associated with problematic outcomes.

- Stress was significantly and negatively related to problematic outcomes when its interaction with escapism was controlled for.

- Users with higher levels of entertainment motivations tended to experience fewer problematic outcomes.

- The interaction term between escapism and stress was significant.

The significant interaction effect in Table 7.3 supports the assumption that the effect of escapism motivations on problematic outcomes of playing online poker is moderated by stress for users with high levels of problematic outcomes (H3k). To visualize the interaction

effect for purposes of interpretation, predicted regression coefficients for problematic outcomes on given combinations of escapism and stress were used to plot the linear interaction effect (see Figure 7.2 below).

Figure 7.2: *Two-way interaction effect between stress and escapism on problematic outcomes for online poker players with more problematic outcomes*
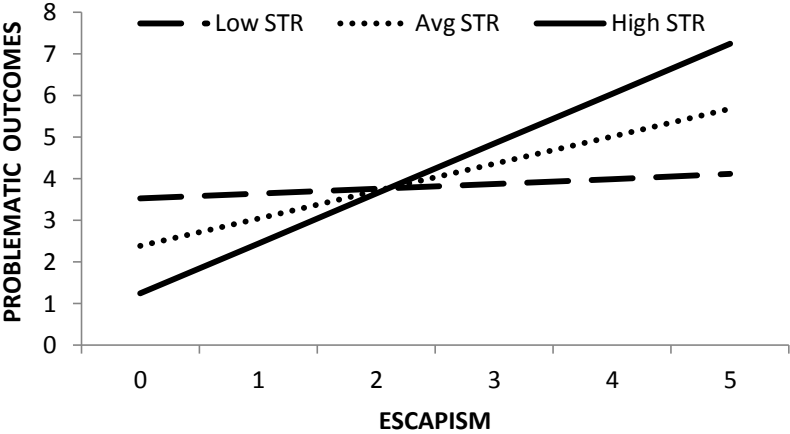
Base: Respondents with high levels of problematic outcomes, N=266.

Figure 7.2 shows that amongst users who are highly motivated by escapism those who have high levels of stress tend to experience more problematic outcomes than those with low levels of stress. Figure 7.2 illustrates how for those with high levels of stress the association between escapism and problematic outcomes is stronger. In other words, for those with high levels of stress, having high levels of escapism is related to considerably more problematic outcomes. By comparison, for those with low levels of stress the level of escapism motivations makes almost no difference. Finally, Figure 7.2 shows that users who are not motivated by escapism experience more problematic outcomes if they are less stressed, as compared with users who are more stressed. Figure 7.2 thus illustrates how the association between motivations for play and problematic outcomes depends on the player's level of stress.

A second regression model was fitted to test H3k in the full sample. The regression model in Table 7.4 includes demographic variables, indicators of psychosocial well-being and motivations for use as predictors. Additionally, an interaction term between escapism and stress was included to test the assumption in H3k.

Table 7.4: *Multiple linear regression for the full sample: interaction between escapism and stress*

Model	Variables	β	t	Model R^2
Full sample				.36
	(Constant)		.697	
	Age	-.066	-1.709	
	Gender (0F, 1M)	.059	1.62	
	Social anxiety	.023	.548	
	Loneliness	.091	1.95	
	Stress	.054	.400	
	Sat. w life	.030	.577	
	Self-esteem	-.054	1.04	
	Social interaction	.038	.974	
	Achievement	.125	3.23**	
	Entertainment	-.248	-6.34**	
	Escapism	.614	4.91**	
	Escapism*Stress	-.162	-.791	

Base: Full sample of respondents, N=513

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.4 shows that for the full sample:

- The regression model explained 36% of total variance in problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

250

- Users with higher levels of entertainment motivations tended to experience fewer problematic outcomes.

- The interaction term between escapism and stress was not significant.

Self-esteem

The assumption that some people cope with low self-esteem through escapist online poker playing, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online poker, from Chapter 3:

H3l: The association between escapism and problematic outcomes of online poker is moderated by self-esteem.

Graphically this can be depicted as in Figure 7.3.

Figure 7.3: *Graphical depiction of self-esteem and escapism as the process underlying problematic outcomes of playing online poker*
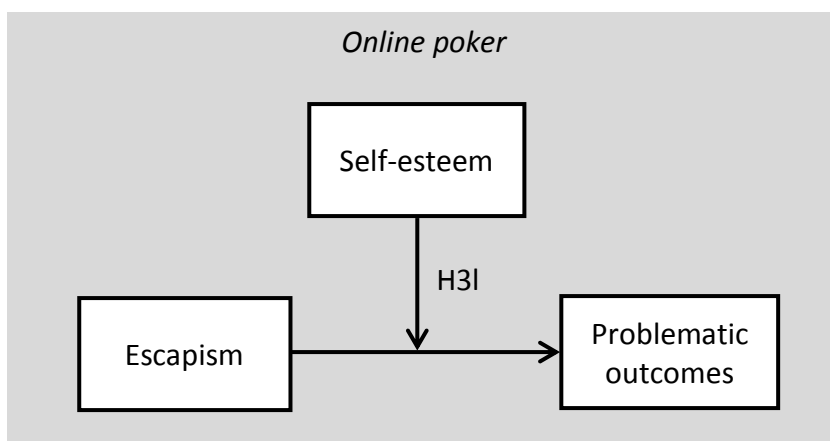
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 7.5. An interaction term

between escapism and self-esteem was included to test the assumption in H3l. The sample

was divided to test H3l both in the high problem sample and the full sample.

Table 7.5: *Multiple linear regression for users with high levels of problematic outcomes: interaction between escapism and self-esteem*

Model	Variables	β	t	Model R^2
High problems				.21
	(Constant)		1.50	
	Age	-.119	-1.90	
	Gender (0F, 1M)	.065	1.11	
	Social anxiety	-.070	-.1.01	
	Loneliness	.020	.264	
	Stress	-.025	-.314	
	Sat. w life	-.124	-1,55	
	Self-esteem	.361	1.51	
	Social interaction	.027	.457	
	Achievement	.068	1.10	
	Entertainment	-.231	-3.59**	
	Escapism	.950	-3.17**	
	Escapism*Self-esteem	-.620	1.98*	

Base: Respondents with high levels of problematic outcomes, N=266.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.5 shows that for users with high levels of problematic outcomes:

- The regression model explained 21% of total variance in problematic outcomes.

- Users with higher levels of entertainment motivations tended to experience fewer problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- The interaction term between escapism and self-esteem was significant.

The significant interaction effect in Table 7.5 supports the assumption that the effect of escapism on problematic outcomes is moderated by self-esteem for users with high levels of problematic outcomes (H3l). To visualize the interaction effect for purposes of interpretation, predicted regression coefficients for problematic outcomes on given combinations of escapism and stress were used to plot the linear interaction effect (see Figure 7.4 below).

Figure 7.4: *Two-way interaction effect between self-esteem and escapism on problematic outcomes for online poker players with more problematic outcomes*
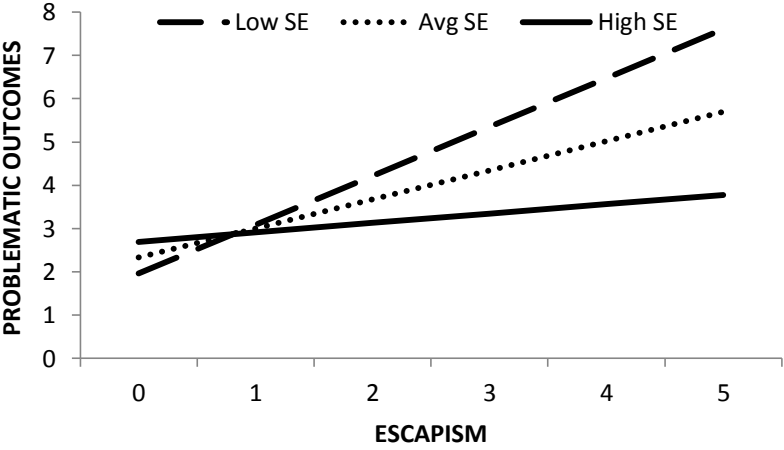
Base: Respondents with high levels of problematic outcomes, N=266

Figure 7.4 shows that, amongst users who are highly motivated by escapism, those with low self-esteem tend to experience more problematic outcomes than those with high self-esteem. Figure 7.4 shows that for those with low levels of self-esteem the association between escapism and problematic outcomes is stronger. In other words, for those with low levels of self-esteem, having high levels of escapism is related to considerably more problematic outcomes. By comparison, for those with high self-esteem the level of escapism motivations makes less difference. Furthermore, Figure 7.4 shows that users who are not

motivated by escapism experience slightly more problematic outcomes if they have high self-esteem, as compared with users with low self-esteem. This indicates an interaction effect between self-esteem and escapism for the full sample.

A second regression model was fitted to test H3l in the full sample. The regression model in Table 7.6 includes as predictors demographic variables, indicators of psychosocial well-being and motivations for use. Additionally, an interaction term between escapism and self-esteem was included to test the assumption in H3l.

Table 7.6: *Multiple linear regression for the full sample: interaction between escapism and self-esteem*

Model	Variables	β	t	Model R^2
Full sample				.36
	(Constant)		.692	
	Age	-.068	-1.75	
	Gender (0F, 1M)	.058	1.59	
	Social anxiety	.023	.545	
	Loneliness	.091	1.94	
	Stress	-.043	-.832	
	Sat. w life	.029	.544	
	Self-esteem	-.024	-.193	
	Social interaction	.045	1.16	
	Achievement	.125	3.24**	
	Entertainment	-.250	-6.37**	
	Escapism	.571	3.22**	
	Escapism*Self-esteem	-.049	-.286	

Base: Full sample of respondents, N=513.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.6 shows that for the full sample:

- The regression model explained 36% of total variance in problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- Users with higher levels of entertainment motivations tended to experience fewer problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- The interaction term between escapism and stress was not significant.

7.3.2 Testing the causal sequence: escapism, stress and self-esteem

The interdisciplinary framework in Figure 3.1 implies a causal model where low well-being motivates a person to go online and use certain platforms to cope with negative feelings, which results in problematic outcomes.

The main question to be addressed by the path models in this section is:

Q3f: To what extent can the proposed causal processes involving escapism, stress and self-esteem explain problematic outcomes of playing online poker?

If the assumptions in the combined framework are correct, then the effects of stress and self-esteem should be at least partially mediated by escapism. Based on assumptions of the causal sequence presented in Figure 3.1 (see Chapter 3), as applied to this section, high stress and low self-esteem should lead to a motivation for escape, carried out through online poker playing, which leads to problematic outcomes. The model is based on the hypothesis (H4) that the association between psychosocial well-being and problematic outcomes is

partly mediated by motivation for use. Partial mediation in this section will be indicated by significant indirect effects between stress or self-esteem and problematic outcomes.

The assumption that part of the effect of stress or self-esteem on problematic outcomes is mediated by escapism can be expressed in the following hypotheses, adapted for online poker, from Chapter 3:

H4k: The association between stress and problematic outcomes is partly mediated by escapism.

H4l: The association between self-esteem and problematic outcomes is partly mediated by escapism.

The model in Figure 7.5 shows the hypothesized processes underlying problematic outcomes, sequentially ordered in accordance with the combined framework. The fit of the path model to the sample with high levels of problematic outcomes will be compared to the fit of a model to the full sample.

Figure 7.5: *Path model for escapism, stress and self-esteem on problematic outcomes*
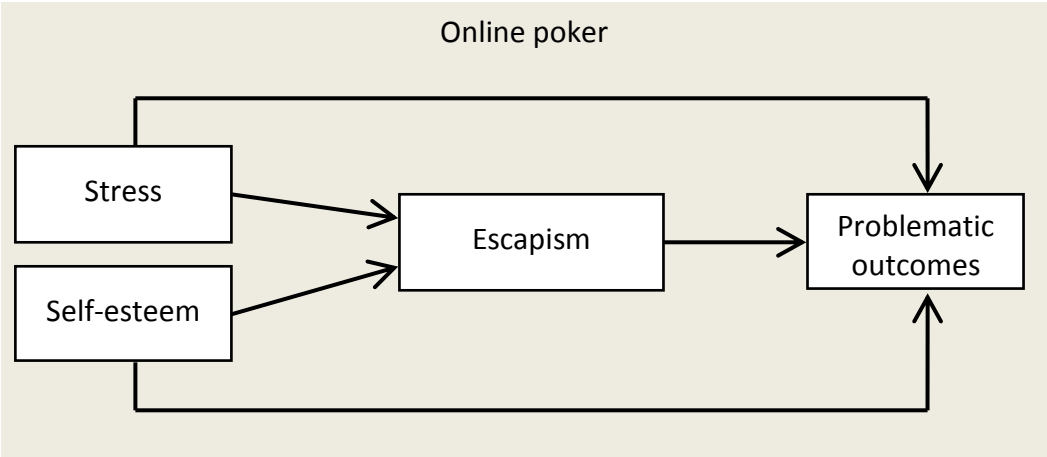
The model fitted to the sample with high levels of problematic outcomes was a poor fit to the data ($\chi^2_{(9)}$=31.322, p.= .000; CFI=.89; RMSEA= .10 (c.i.=.06-.13, p = 018); AIC= 67.322).

However, a similar model for the full sample was a good fit to the data ($\chi^2_{(9)}$=26.992, p.= .001; CFI=.96; RMSEA= .06 (c.i.=.04-.09, p=.198); AIC= 62.992) and will be interpreted in this section. This model is presented in Table 7.5 and explains 24.6% of the variance in problematic outcomes.

Table 7.7: *Coefficients for escapism path model in the full sample*

			β	b
Stress	--->	Escapism	.350*	.174*
Stress	--->	Problematic outcomes	-.019	-.022
Self-esteem	--->	Escapism	-.144*	-.082*
Self-esteem	--->	Problematic outcomes	-.092*	-.117*
Escapism	--->	Problematic outcomes	.466*	1.04*

Base: Full sample of respondents, N=513.

 * Coefficient significant, p <.01.

Table 7.8: *Standardized explanatory power of variables in escapism path models in the full sample*

	R2	Total	Direct	Indirect
Stress		.143	-.019	.163
Self-esteem		-.159	-.092	-.067
Escapism	.204	.466	.466	
Problematic outcomes	.246			

Base: Full sample of respondents, N=513.

The path model shows that part of the effect of both stress (H4k) and self-esteem (H4l) on problematic outcomes is indirect and mediated by escapism. The results show that stress and self-esteem carry their influence on problematic outcomes partly by influencing escapism. In the case of stress, the direct effect was not significant, which means that stress

257

only influences problematic outcomes of online poker playing via its influence on escapism.

A bootstrap approximation obtained by constructing two-sided, bias-corrected confidence intervals showed that the mediated effects of stress and self-esteem on problematic outcomes were both significantly different from zero (p<.03, two-tailed). This supports the theoretical model proposed in Figure 3.1 for the causal process involving stress, self-esteem and escapism in the context of online poker (Q3f).

7.3.3 Discussion

This section sought to understand the extent to which the proposed causal processes can explain problematic outcomes of playing online poker, focusing on part of the process involving escapism, stress and self-esteem. As part of the process analysis, both moderating and mediating effects were explored. A number of significant main effects were discovered in the regression models, and these will be discussed in the chapter conclusions.

The results from the regression models in section 7.3.1 supported the hypotheses that the effects of stress (H3k) and self-esteem (H3i) moderate the association between escapism and problematic outcomes of playing online poker for users with high levels of problematic outcomes. The question asked in section 7.3 was whether the assessment of problematic outcomes of playing online poker should consider the interaction between psychosocial well-being and motivations for use (Q2c). The results show that interaction effects between psychosocial well-being and motivations for use are important factors in explaining problematic outcomes and support the combination of an addiction and a uses and gratifications framework for online poker. It is also worth noting that these interaction effects were not significant in the full sample. This suggests that the interaction between

stress or self-esteem and escapism in the high-problem sample, which represents avoidance-based coping behaviour (e.g., Shiffman & Wills, 1985; Lazarus & Folkman, 1984), may be one defining factor that separates the two samples and explains the higher degree of problematic outcomes. That this only occurs in the high-problem sample indicates that the explanation of problematic outcomes as a result of maladaptive coping behaviour may only be valid for those who experience a high degree of problematic outcomes.

Finally, section 7.3.2 asked to what extent the proposed causal processes involving escapism, stress and self-esteem could explain problematic outcomes of playing online poker (Q3c). The path models in this section show that escapism is an important mediator between stress or self-esteem and problematic outcomes. The direct effects of stress and self-esteem on problematic outcomes were not significant, while the indirect effects were significant. This model also shows a case of complete mediation; stress lost significance when the indirect effect via escapism was controlled for. This means that people with high levels of stress do not experience more problematic outcomes from playing online poker as a direct consequence of their stress. Rather, problematic outcomes can be better explained as an outcome of cases in which people's high levels of stress lead them to play online poker for purposes of escapism. This shows the utility of also considering motivations for use in studies of problematic outcomes, as it affords an explanation for *why* psychosocial issues lead to more problems. These results support the causal model proposed in Figure 3.1.

7.3.4 Testing moderating effects: achievement, satisfaction with life and self-esteem

While achievement is a motivation that may underlie poker playing in general due to its naturally competitive setting (Hayano, 1983), in this study achievement is thought of as the

desire to improve and gain a better reputation on the poker site. It is assumed that this type

of achievement may act as a response to issues with self-esteem or satisfaction with life

(e.g., Ricketts & Macaskill, 2003).

Satisfaction with life

The assumption that some people cope with low satisfaction with life via achievement-

oriented online poker playing, and that this is one of the processes that explains problematic

outcomes, can be expressed in the following hypothesis, adapted for online poker, from

Chapter 3:

> H3m: The association between achievement and problematic outcomes of online
>
> poker is moderated by satisfaction with life.

Graphically this can be depicted as in Figure 7.6

Figure 7.6: *Graphical depiction of satisfaction with life and achievement as the process underlying problematic outcomes of playing online poker*
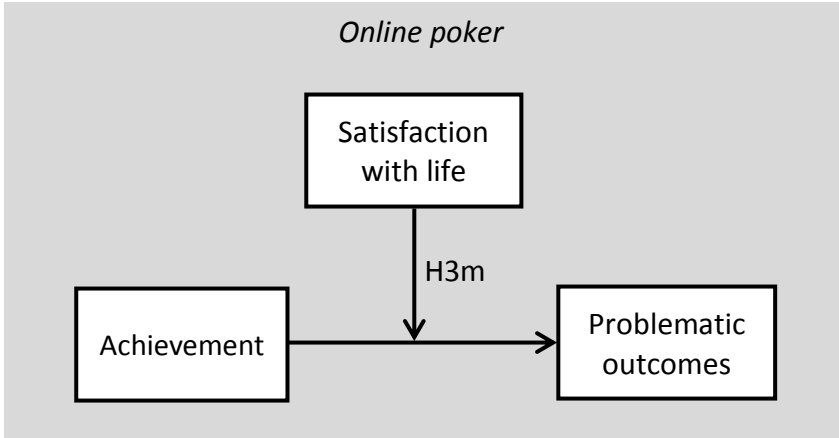
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 7.9. Additionally, an interaction term between achievement and satisfaction with life was included to test the assumption in H3m. The sample was divided to test H3m both in the high problem sample and the full sample.

Table 7.9: *Multiple linear regression for users with high levels of problematic outcomes: interaction between achievement and satisfaction with life*

Model	Variables	β	t	Model R^2
High problems				.19
	(Constant)		4.65**	
	Age	-.115	-1.82	
	Gender (0F, 1M)	.073	1.25	
	Social anxiety	-.058	-.831	
	Loneliness	.000	-.004	
	Stress	-.046	-.577	
	Sat. w life	-123	--1.51	
	Self-esteem	-.083	-1.05	
	Social interaction	.023	.386	
	Achievement	.083	.404	
	Entertainment	-.234	-3.60**	
	Escapism	.374	5.31**	
	Achievement*Sat. w life	-.018	-.085	

Base: Respondents with high levels of problematic outcomes, N=266.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.9 shows that for users with high levels of problematic outcomes:

- The regression model explained 19% of total variance in problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of entertainment motivations tended to experience less problematic outcomes.

- The interaction term between achievement and satisfaction with life was not significant.

A second regression model was fitted to test H3m in the full sample. The regression model in Table 7.10 includes demographic variables, indicators of psychosocial well-being and motivations for use as predictors. Additionally, an interaction term between achievement and satisfaction with life was included to test the assumption in H3m.

Table 7.10: *Multiple linear regression for the full sample: interaction between achievement and satisfaction with life*

Model	Variables	β	t	Model R^2
Full sample				.36
	(Constant)		1.30	
	Age	-.066	-1.71	
	Gender (0F, 1M)	.059	1.62	
	Social anxiety	.023	.547	
	Loneliness	.090	1.93	
	Stress	-.045	-.878	
	Sat. w life	.029	.558	
	Self-esteem	-.055	-1.06	
	Social interaction	.043	1.09	
	Achievement	.082	.591	
	Entertainment	-.249	-6.36**	
	Escapism	.522	11.9**	
	Achievement*Sat. w life	-.045	.325	

Base: Full sample of respondents, N=513.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.10 shows that for the full sample:

- The regression model explained 36% of total variance in problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of entertainment motivations tended to experience less problematic outcomes.

- The interaction term between achievement and satisfaction with life was not significant.

Self-esteem

The assumption that some people cope with low self-esteem via achievement-oriented online poker playing, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online poker, from Chapter 3:

H3n: The association between achievement and outcomes of playing online poker is moderated by self-esteem.

Graphically this can be depicted as in Figure 7.7.

Figure 7.7: *Graphical depiction of self-esteem and achievement as the process underlying problematic outcomes of playing online poker*
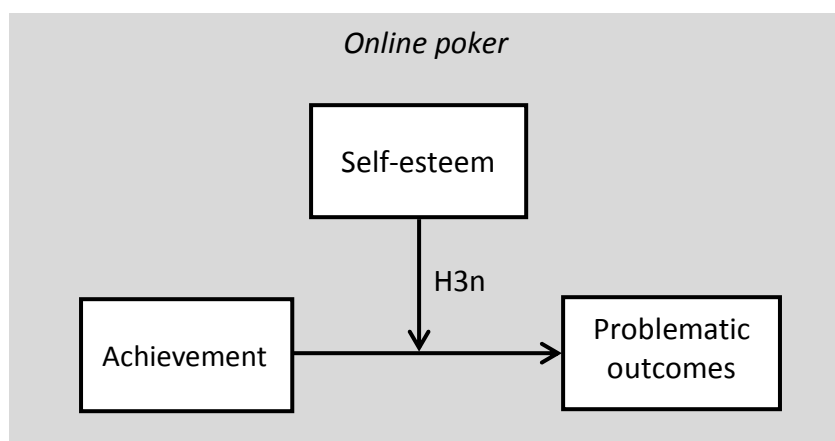
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 7.11. An interaction term between achievement and self-esteem was included to test the assumption in H3n. The sample was divided to test H3n both in the high-problem sample and in the full sample.

Table 7.11: *Multiple linear regression for users with high levels of problematic outcomes: interaction between achievement and self-esteem*

Model	Variables	β	t	Model R^2
High problems				.19
	(Constant)		4.52**	
	Age	-.116	-1.84	
	Gender (0F, 1M)	.076	1.29	
	Social anxiety	-.056	-.795	
	Loneliness	-.002	-.030	
	Stress	-.044	-.558	
	Sat. w life	-.124	-1.53	
	Self-esteem	-.075	-.926	
	Social interaction	.025	.411	
	Achievement	.238	.695	
	Entertainment	-237	-3.64**	
	Escapism	.377	5.34**	
	Achievement*Self-esteem	-.177	-.509	

Base: Respondents with high levels of problematic outcomes, N=266.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.11 shows that for users with high levels of problematic outcomes:

- The regression model explained 19% of total variance in problematic outcomes.

- Users with higher levels of entertainment motivations tended to experience less problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- The interaction term between achievement and self-esteem was not significant.

A second regression model was fitted to test H3n in the full sample. The regression model in Table 7.12 includes as predictors demographic variables, indicators of psychosocial well-being and motivations for use. Additionally, an interaction term between achievement and self-esteem was included to test the assumption in H3n.

Table 7.12: *Multiple linear regression for the full sample: interaction between achievement and self-esteem*

Model	Variables	β	t	Model R²
Full sample				.36
	(Constant)		1.32	
	Age	-.070	-1.81	
	Gender (0F, 1M)	.056	1.54	
	Social anxiety	.026	.627	
	Loneliness	.091	1.94	
	Stress	-.045	-.864	
	Sat. w life	.027	.512	
	Self-esteem	-.052	-1.01	
	Social interaction	.047	1.21	
	Achievement	.399	1.73	
	Entertainment	-.249	-6.35**	
	Escapism	.522	11.9**	
	Achievement*Self -esteem	-.278	-1.20	

Base: Full sample of respondents, N=513.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.12 shows that for users with high levels of problematic outcomes:

- The regression model explained 36% of total variance in problematic outcomes.

- Users with higher levels of entertainment motivations tended to experience less problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- The interaction term between achievement and self-esteem was not significant.

7.3.5 Testing the causal sequence: achievement, satisfaction with life and self-esteem

The interdisciplinary framework in Figure 3.1 implies a causal model where low well-being motivates a person to go online and use certain platforms to cope with negative feelings which results in problematic outcomes.

The main question to be addressed by the path models in this section is:

Q3g: To what extent can the proposed causal processes involving achievement, satisfaction with life and self-esteem explain problematic outcomes of playing online poker?

If the assumptions in the combined framework are correct, then the effects of satisfaction with life and self-esteem should be at least partially mediated by achievement. The assumptions of the causal sequence presented in Figure 3.1 (see Chapter 3), as applied to this section, are that low satisfaction with life and low self-esteem should lead to achievement-oriented motivations for playing online poker, which eventually lead to problematic outcomes. The model is based on the hypothesis (H4) that the association between psychosocial well-being and problematic outcomes is partly mediated by motivation for use. Partial mediation in this section will be indicated by significant indirect effects between stress or self-esteem and problematic outcomes.

The assumption that part of the effect of satisfaction with life or self-esteem on problematic outcomes is mediated by achievement can be expressed in the following hypotheses, adapted for online poker, from Chapter 3:

H4m: The association between satisfaction with life and problematic outcomes is partly mediated by achievement.

H4n: The association between self-esteem and problematic outcomes is partly mediated by achievement.

The model in Figure 7.8 shows the hypothesized processes underlying problematic outcomes, sequentially ordered according to the interdisciplinary framework. The fit of the path model to the sample with high levels of problematic outcomes will be compared to the fit of a model to the full sample.

Figure 7.8: *Path model for achievement, satisfaction with life and self-esteem on problematic outcomes*
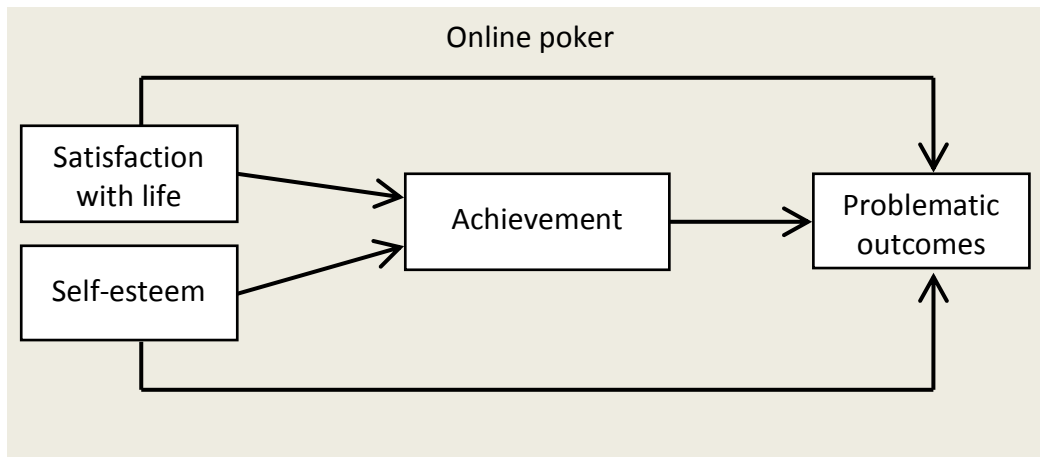
A path model for the given variables was a poor fit for all indicators even when non-significant paths for demographics were fixed to zero ($\chi^2_{(9)}$=45.684, p.= .000; CFI=.79; RMSEA= .12 (c.i.=.09-.16) p = .000; AIC= 81.684). This model finds no support in the data and will not be interpreted.

A similar model for the full sample was also a poor fit to the data when non-significant paths for demographics were fixed to zero ($\chi^2_{(9)}$=68.409, p.= .000; CFI=.84; RMSEA= .11 (c.i.=.09-.14) p = .000; AIC= 104.409). This model finds no support in the data and will not be interpreted.

This section finds no support for the hypotheses that the effects of satisfaction with life (H4m) or self-esteem (H4n) on problematic outcomes of playing online poker are mediated by achievement.

7.3.6 Discussion

This section sought to understand the extent to which the proposed causal processes can explain problematic outcomes of playing online poker, focusing on part of the process involving achievement, satisfaction with life and self-esteem. As part of the process analysis, both moderating and mediating effects were explored. Significant main effects were discovered in the regression models, and these will be discussed in the chapter conclusions.

The results from the regression models in section 7.3.4 showed that none of the hypothesized interaction effects were significant. It was assumed that the association between achievement and problematic outcomes would be moderated by satisfaction with life (H3m) or self-esteem (H3n). This assumption was not supported by the results. Furthermore, the proposed path model in section 7.3.5, which proposed that achievement mediates the effect of satisfaction with life (H4m) or self-esteem (H4n) on problematic outcomes, had no support in the data. The model was a poor fit in the sample with high levels of problematic outcomes as well as in the full sample.

7.3.7 Testing moderating effects: social motivations, social anxiety and loneliness

While researchers have proposed that social interaction is an important reward and incentive for gambling, followed by positive outcomes (Campbell, 1976; Hayano, 1983), it is unclear whether this is also related to problematic outcomes. Some speculation suggests that this may be the case, as the social and entertaining nature of gambling may have positive outcomes while at the same time it may lead to problematic outcomes because time is spent and money is lost (Ocean & Smith, 1993). There seems to be some tentative support in the literature for the argument that social motivations can lead to more problematic outcomes of casino gambling, but it is unclear whether this is also applicable to online gambling. Griffiths and Parke (2002) initially suggested that online poker specifically was an asocial activity. However, a later study by Wood, Griffiths and Parke (2007) took the opposite stance and suggested instead that online poker was a highly social activity. While research in this area is relatively scarce, due to the newness of the activity, this section will test the proposed sequential model for social compensation in the context of online poker.

Social anxiety

The assumption that some people cope with social anxiety through playing online poker, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online poker, from Chapter 3:

H3o: The association between social motivations and problematic outcomes of playing online poker is moderated by social anxiety.

Graphically this can be depicted as in Figure 7.9

Figure 7.9: *Graphical depiction of social anxiety and social motivations as the process underlying problematic outcomes of playing online poker*
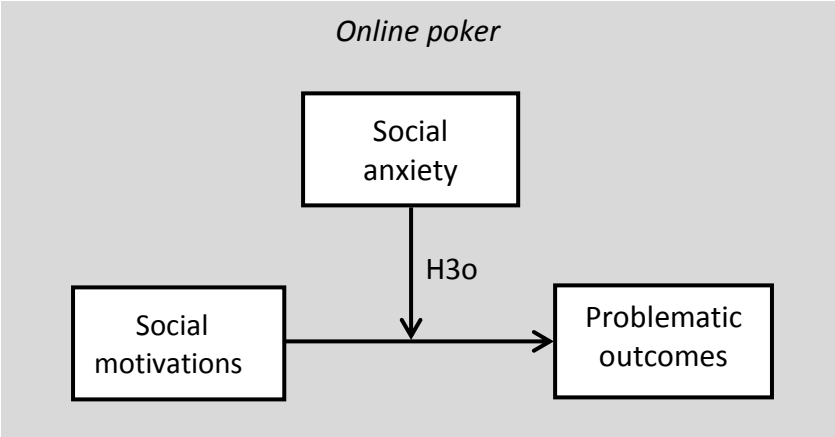
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 7.13. Additionally, an interaction term between social anxiety and social motivations was included to test the assumption in H3o. The sample was divided to test H3o both in the high problem sample and in the full sample.

Table 7.13: *Multiple linear regression for users with high levels of problematic outcomes: interaction between social motivations and social anxiety*

Model	Variables	β	t	Model R^2
High problems				.15
	(Constant)		4.26**	
	Age	-.112	-1.81	
	Gender (0F, 1M)	.077	1.23	
	Social anxiety	-.064	-.414	
	Loneliness	.000	-.001	
	Stress	-.052	-.574	
	Sat. w life	-.136	-1.48	
	Self-esteem	-.261	-1.06	
	Social interaction	-.304	.024	
	Achievement	.064	1.07	
	Entertainment	-.242	-3.60**	
	Escapism	.372	5.30**	
	Social mot. *Social anxiety	.389	.123	

Base: Respondents with high levels of problematic outcomes, N=266.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.13 shows that for users with high levels of problematic outcomes:

- The regression model explained 15% of total variance in problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of entertainment motivations tended to experience less problematic outcomes.

- The interaction term between social motivations and social anxiety was not significant.

A second regression model was fitted to test H3o in the full sample. The regression model in Table 7.14 includes as predictors demographic variables, indicators of psychosocial well-

being and motivations for use. Additionally, an interaction term between social motivations and social anxiety was included to test the assumption in H3o.

Table 7.14: *Multiple linear regression for the full sample: interaction between social motivations and social anxiety*

Model	Variables	β	t	Model R^2
Full sample				.34
	(Constant)		.228	
	Age	-.065	-1.70	
	Gender (0F, 1M)	.059	1.65	
	Social anxiety	.297	2.47*	
	Loneliness	.091	1.95	
	Stress	-.49	-.949	
	Sat. w life	.015	.278	
	Self-esteem	-.046	-.890	
	Social interaction	.267	2.68**	
	Achievement	.121	3.15**	
	Entertainment	-.250	-6.41**	
	Escapism	.515	11.8**	
	Social mot.*Social anxiety	.363	-2.42**	

Base: Full sample of respondents, N=513.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.14 shows that for the full sample:

- The regression model explained 34% of total variance in problematic outcomes.

- Users with higher levels of social anxiety tended to experience fewer problematic outcomes and, conversely, users with low levels of social anxiety tended to experience more problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- Users with higher levels of social motivations tended to experience fewer problematic outcomes.

- Users with higher levels of entertainment motivations tended to experience fewer problematic outcomes.

- The interaction term between social motivations and social anxiety was significant.

The significant interaction effect in Table 7.14 supports the assumption that the effect of social motivations on problematic outcomes is moderated by social anxiety in the full sample (H3o). To visualize the interaction effect for purposes of interpretation, predicted regression coefficients for problematic outcomes on given combinations of social motivations and social anxiety were used to plot the linear interaction effect (see Figure 7.10 below).

Figure 7.10: *Two-way interaction effect between social anxiety and social motivations on problematic outcomes for the full sample of online poker players*
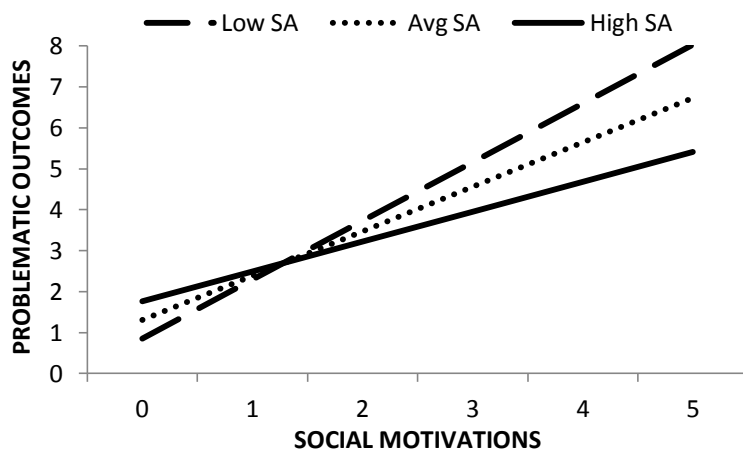
Base: Full sample of respondents, N=513.

Figure 7.10 shows that amongst users who are highly motivated by social motivations those with high levels of social anxiety tend to experience less problematic outcomes, while those with low levels of social anxiety tend to experience more problematic outcomes. Figure 7.10 shows that for those with low levels of social anxiety the association between social motivations and problematic outcomes is stronger. In other words, for those with low levels of social anxiety having high levels of social motivations is related to more problematic outcomes. By comparison, for those with high social anxiety the level of social motivations matters slightly less. This indicates an interaction effect between social motivations and social anxiety for the full sample.

Loneliness

The assumption that some people cope with loneliness through social interaction on online poker sites, and that this is one of the processes that explains problematic outcomes, can be expressed in the following hypothesis, adapted for online poker, from Chapter 3:

H3p: The association between social motivations and problematic outcomes of playing online poker is moderated by loneliness.

Graphically this can be depicted as in Figure 7.11

Figure 7.11: *Graphical depiction of loneliness and social motivations as the process underlying problematic outcomes of playing online poker*
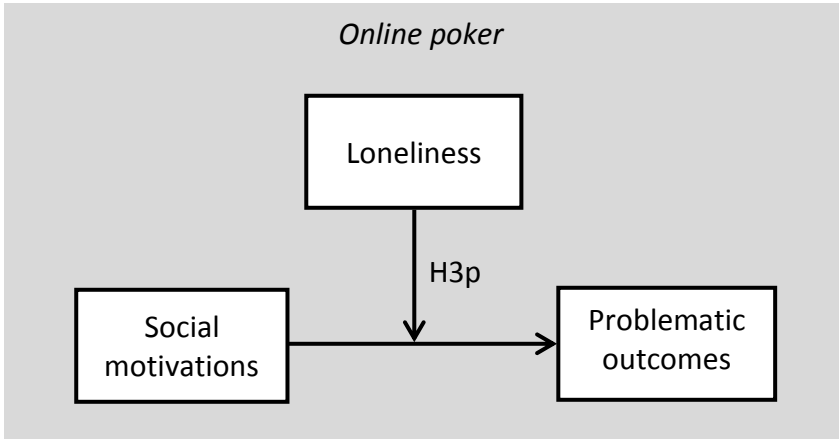
A multiple regression model with demographic variables, indicators of psychosocial well-being and motivations for use as predictors is presented in Table 7.15. An interaction term between social motivations and loneliness was included to test the assumption in H3p. The sample was divided to test H3p both in the high problem sample and the full sample.

Table 7.15: *Multiple linear regression for users with high levels of problematic outcomes: interaction between social motivations and loneliness*

Model	Variables	β	t	Model R²
High problems				.19
	(Constant)		3.82**	
	Age	-.112	-1.81	
	Gender (0F, 1M)	.077	1.28	
	Social anxiety	-.064	-.819	
	Loneliness	.000	.661	
	Stress	-.052	-.594	
	Sat. w life	-.136	-1.61	
	Self-esteem	-.261	-1.05	
	Social interaction	-.304	.796	
	Achievement	.064	1.04	
	Entertainment	-.242	-3.64**	
	Escapism	.372	5.34**	
	Social mot.*Loneliness	.389	-.714	

Base: Respondents with high levels of problematic outcomes, N=266.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.15 shows that for users with high levels of problematic outcomes:

- The regression model explained 19% of total variance in problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of entertainment motivations tended to experience fewer problematic outcomes.

- The interaction term between social motivations and loneliness was not significant.

A second regression model was fitted to test H3o in the full sample. The regression model in Table 7.16 includes as predictors demographic variables, indicators of psychosocial well-being and motivations for use. Additionally, an interaction term between social motivations and loneliness was included to test the assumption in H3o.

Table 7.16: *Multiple linear regression for the full sample: interaction between social motivations and loneliness*

Model	Variables	β	t	Model R^2
Full sample				.36
	(Constant)		1.13	
	Age	-.067	-1.74	
	Gender (0F, 1M)	.059	1.61	
	Social anxiety	.024	.560	
	Loneliness	.097	.809	
	Stress	-.044	-.858	
	Sat. w life	.029	.539	
	Self-esteem	-.055	-1.05	
	Social interaction	.051	.456	
	Achievement	.125	3.24**	
	Entertainment	-.249	-6.35**	
	Escapism	.522	11.9**	
	Social mot.*Loneliness	-.010	-.064	

Base: Full sample of respondents, N=513.

 * Correlation significant, p <.05.

** Correlation significant, p <.01.

Table 7.16 shows that for the full sample:

- The regression model explained 36% of total variance in problematic outcomes.

- Users with higher levels of escapism motivations tended to experience more problematic outcomes.

- Users with higher levels of achievement motivations tended to experience more problematic outcomes.

- Users motivated by entertainment tended to experience less problematic outcomes.

- The interaction effect between social motivations and loneliness was not significant.

7.3.8 Testing the causal sequence: social motivations, social anxiety and loneliness

The interdisciplinary framework depicted in Figure 3.1 implies a causal model where low well-being motivates a person to go online and use certain platforms to cope with negative feelings, which results in problematic outcomes.

The main question to be addressed by the path models in this section is:

Q3h: To what extent can the proposed causal processes involving social motivations, social anxiety and loneliness explain problematic outcomes of playing online poker?

If the assumptions underlying the combined framework are correct then the effects of social anxiety and loneliness should be at least partially mediated by social motivations for playing online poker. Following the causal sequence as presented in Figure 3.1 (see Chapter 3), as applied to this section, high levels of social anxiety and loneliness should lead to greater motivations for social interaction on online poker sites, which eventually leads to problematic outcomes. Underlying this model is the hypothesis (H4) that the association between psychosocial well-being and problematic outcomes is partly mediated by motivation for use. Partial mediation in this section will be indicated by significant indirect effects between social anxiety or loneliness and problematic outcomes.

The assumption that part of the effect of social anxiety or loneliness on problematic outcomes is mediated by social motivations can be expressed in the following hypotheses, adapted for online poker, from Chapter 3:

H4o: The association between social anxiety and problematic outcomes is partly mediated by social motivations.

H4p: The association between loneliness and problematic outcomes is partly mediated by social motivations.

The model in Figure 7.12 shows the hypothesized processes underlying problematic outcomes, sequentially ordered in accordance with the combined framework. The fit of the path model to the sample with high levels of problematic outcomes will be compared to the fit of a model to the full sample.

Figure 7.12: *Path model for social motivations, social anxiety and loneliness on problematic outcomes*
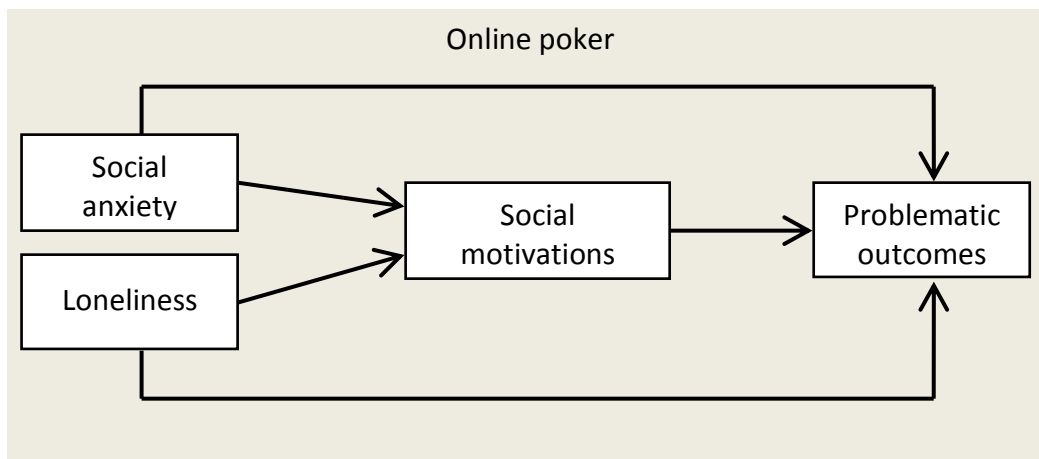
A path model for the given variables was a poor fit for all indicators when non-significant paths for demographics were fixed to zero ($\chi^2_{(9)}$=45.098, p.= .000; CFI=.632; RMSEA= .12 (c.i.=.09-.16) p = .000; AIC= 81.098. This model finds no support in the data and will not be interpreted.

A similar model for the full sample was a moderate fit to the data when non-significant paths for demographics were fixed to zero ($\chi^2_{(9)}$=36.896, p.= .000; CFI=.85; RMSEA= .08 (c.i.=.05-.10) p = .035; AIC= 72.896). However, in this model the indirect effects were not significant and zero or close to zero. This model thus finds no support in the data and will not be interpreted. The assumptions stated by H4o and H4p were not supported for either sample.

This section finds no support for the hypotheses that the effects of social anxiety (H4o) or loneliness (H4p) on problematic outcomes of playing online poker are mediated by social motivations.

7.3.9 Discussion

This section sought to understand the extent to which the proposed causal processes can explain problematic outcomes of playing online poker, focusing on part of the process involving social motivations, social anxiety and loneliness. As part of the process analysis, both moderating and mediating effects were explored. A number of significant main effects were discovered in the regression models, and these will be discussed in the chapter conclusions.

The results from the regression models in section 7.3.7 showed that one out of four hypotheses was supported. Table 7.14 shows that for the full sample, users who are highly motivated by social motivations, while having high levels of social anxiety, tend to experience fewer problematic outcomes from playing online poker than those with low social anxiety (H3o). This finding is contrary to the expected result because it shows how, once social motivations are also considered, people with low well-being experience fewer

problems than those with high well-being. The correlation matrix (Appendix III) shows that high social anxiety was associated with more problematic outcomes from playing online poker; this is still the case for the main effect of social anxiety when its interaction with social motivations is controlled for. However, those with low social anxiety experience more problems as the social motivation increases, while those with high social anxiety experience comparatively fewer problematic outcomes, as illustrated in Figure 7.10.

Unfortunately, the path model did not find support for mediating effects that might have shed some light on the surprising result. The assumptions of H4o and H4p found no support in the existing data. Although the model for the full sample showed a moderate fit to the data, the indirect effects were close to zero and not significant.

7.4 Conclusions

The first question asked in this chapter was: which variables from the addiction and the uses and gratifications frameworks are significant predictors for problematic outcomes of playing online poker when variables from both frameworks are controlled for (Q1c)?

The argument presented in this thesis is that a uses and gratifications framework can usefully be combined with the addiction framework, as one theoretical perspective may not be enough to adequately explain why problematic outcomes occur (Griffiths, 2005). Comparing the addiction and the uses and gratifications frameworks in the context of online poker, as expressed by H1c and H2c, showed that the measures of psychosocial well-being were generally not significant predictors when motivations for play were also included in the model (Q1c). Throughout this chapter, only the main effect of stress and social anxiety were

significant when their interaction with social motivations was controlled for. On its own, no indicator of psychosocial well-being was a significant predictor of problematic outcomes, even though all were significant predictors in the correlation matrix. This indicates that in future studies of problematic outcomes of online poker playing it may be more useful to consider why people play instead of focusing on their psychosocial well-being.

The main effect of achievement was significantly associated with more problematic outcomes in all regression models for the full sample, but not significant in any regression model for the sample with high levels of problematic outcomes. This suggests that, for the average poker player in the sample, achievement as a motivation may contribute to more problematic outcomes, but these problematic outcomes will still be comparatively few. Motivations to achieve and perform better may lead to extensive involvement, which in turn leads to some problematic outcomes due to the time spent on online poker. However, this may be a consequence of the extensive involvement rather than a process of coping, which is why the problematic outcomes remain few. As Griffiths (2010) mentioned, some people are excessive users, but not all excessive users have problematic outcomes. What is captured here may be an example of what generally causes people (i.e. in the full sample) to engage in excessive use, which leads to some degree of problematic outcomes because of the time spent online. However, what this does not explain is why some people experience more problematic outcomes than others. If the positive effect of achievement was only found in the high-problem sample, for example, this would suggest that problematic effects of achievement motivations are one thing that distinguishes problem-players from non-problem players (e.g., Ricketts & Macaskill, 2003, 2004), but this was not the case.

The main effect of escapism was significant in every regression model except where its interaction effect with stress was controlled for (Table 7.3). This was similar to the result reported in Chapter 5 and suggests that the effect of escapism on problematic outcomes may depend for online poker players on their level of stress. Once the interaction effect was controlled for, escapism was no longer significant, but rather had a near-zero effect on problematic outcomes. This supports the stress-coping model (Shiffman & Wills, 1985) and the argument, as in this thesis, that this process of coping seems to be one explanation for why some people experience more problematic outcomes than others, since the interaction effect was only significant in the sample with high levels of problematic outcomes. It also responds positively, by showing the utility of this approach, to the question of whether the addiction and the uses and gratifications frameworks should be combined in the study of problematic outcomes of playing online poker (Q2c)

Finally, the main effect of entertainment was a significant negative predictor in all regression models. This supports previous research on an entertainment factor for gambling which is consistently related to fewer problems (Hayano, 1983; Campbell, 1976; Lin et al., 2010).

The second question asked in this chapter was: should the assessment of problematic outcomes of playing online poker also consider the interaction between psychosocial well-being and motivations for play (Q2c)?

The results reported in section 7.3.1 support both hypotheses stating that stress and self-esteem would moderate the association between escapism and problematic outcomes. This suggests that those who experience high levels of problematic outcomes from playing online

poker, which is the group that researchers interested in excessive and problematic use should focus on, may do so because their escapist motivations are grounded in high stress or low self-esteem. Playing online poker to escape the negative feelings of stress or self-esteem results in what Nower et al. (2004) have referred to, in the context of the wider literature on gambling addiction, as a maladaptive coping strategy. Confirming the arguments presented in this thesis, it is the maladaptive response (here discussed as a coping behaviour) that is shown to result in excessive use with problematic outcomes. These results provide further empirical support for the argument that problem gamblers often gamble to escape stressful life situations (e.g., Marget, Gupta & Deverensky 1999; Nower, Derevensky & Gupta, 2004; Blaszynski & Nower, 2002; Wood & Griffiths, 2007). The results also offer further insight into the processes underlying problematic outcomes of playing online poker by showing how a combination of factors, motivations for play and well-being, affect the outcome. This supports the interdisciplinary framework proposed in this thesis and ties in with Griffiths's (2005) argument that studies of excessive use or addiction need to consider multiple theoretical perspectives.

Furthermore, the literature reviewed earlier suggested that escape is a primary motivation for gambling, and particularly for problem gambling. However, the results in this chapter suggest that escapist gambling may not be problematic unless preceded by stress. This could explain why qualitative results from studies by Hayano (1983) and Campbell (1976) show mostly positive outcomes from escape-motivated gambling, in contrast to quantitative studies that report mostly negative outcomes. Quantitative studies may benefit from examining further the interaction between escapism and stress amongst groups of problem gamblers, rather than focusing on direct effects in the full sample of respondents.

Qualitative studies may have had an edge so far because interviewers focused precisely on the motivations and processes underlying problem gambling (e.g., Campbell, 1976; Wood & Griffiths, 2007), rather than on statistical associations.

This chapter has shown that, in the high-problem sample, for people with low levels of stress the level of escapism does not matter as much as for people with higher levels of stress. Figure 7.2 shows how the association between escapism and problematic outcomes is stronger for those with high levels of stress than for those with low levels of stress. For those with low levels of stress, higher escapism motivations do not really impact the amount of problematic outcomes they experience. Once again, this result illustrates the value of examining interaction effects in the study of problematic outcomes. That the interaction effect was only significant in the high-problem sample indicates that the use of online poker as a way to cope with stressful life events (e.g., Shiffman & Wills, 1985) may be one explanation for the higher degree of problematic outcomes. This finding has strong support in the existing literature on gambling (e.g., Marget, Gupta & Deverensky, 1999; Nower, Derevensky & Gupta, 2004; Blaszynski & Nower, 2002; Wood & Griffiths, 2007) and extends it to also apply to online poker. As in Chapter 5, the findings can be explained by considering the source of stress. It was argued that, if stress is related to a lack of time, then low stress means more free time and more time spent on online poker. This could lead to a higher level of problematic outcomes, as defined in this thesis, because of high frequency of play. As stress increases and spare time decreases, less time is spent on online poker and fewer problematic outcomes occur.

None of the hypothesized interaction effects was significant for achievement. This was also similar to the results reported in Chapter 5. It may have been a mistake here to operationalize achievement as a need for structural advancement, progression and skill improvement. The questions that were asked, primarily adapted from Yee's (2006) inventory for online gaming motivations and the cognitive interviews, may not fully capture achievement in a gambling setting. As discussed earlier in this chapter, achievement has been conceptualized in many different ways in the study of gambling and poker play and it is possible that the operationalization of achievement chosen here was not the most appropriate. Perhaps a focus on the need for accomplishment or on the desire to reach higher status in society may have corresponded more closely with compensatory motivations grounded in low satisfaction with life or low self-esteem, as suggested by Ricketts & Macaskill (2003). A different explanation draws on Ricketts and Macaskill's (2003) finding that gamblers who experience high levels of arousal during gambling did not report that a particular emotional disturbance preceded gambling sessions. This is important because the same authors found that an achievement motivation was associated with high arousal through its mood-altering effect. Therefore it is possible that achievement-oriented players simply enjoy this part of the game and play excessively as a result of their enjoyment, not because they are trying to cope with psychosocial issues. Poker is an achievement-oriented and competitive game and, as Hayano (1983) reports, improving your skill and advancing your game-play is related in a poker environment to many qualitative and financial benefits. It has been assumed in this thesis that a need for advancement and skill improvement would be related to low satisfaction with life or low self-esteem, but it is possible that behaviour motivated by such needs is natural in poker settings. This could explain why, in the sample with high levels of problematic outcomes, achievement is a

predictor of more problematic outcomes. For these players, achievement is a crucial part of their passion for online poker and explains an interest rather than a problem. Indeed, as Rickets and Macaskill (2003) suggest, the association between achievement and problem gambling appears to be mediated by the perceived likelihood of winning back money lost rather than by anything else. This may explain why the path model found no support for any of the hypotheses.

Finally, the results reported in the section on social interaction show support for one hypothesis out of four: social anxiety moderated the effect between social motivations and problematic outcomes. However, the direction of the moderating effect was opposite from the expected result, as it shows how people with low social anxiety experience more problems than those with high social anxiety, once social motivations are also considered. One explanation for this could be that people who are less socially anxious are more likely to play online poker for social purposes, as suggested by Wood, Griffiths and Parke (2007b). It may be that a social environment that encourages frequent poker playing is more likely to lead to excessive play and problematic outcomes. This supports the claim that motivations and social environment matter a lot in explaining problematic outcomes and addiction-like symptoms (Peele, 1986; 1987).

Three hypotheses for social motivations were not supported, despite having some level of support in the existing literature. However, most literature is based on studies of casino gambling. It could be that online poker is different from casino gambling in that it is not an equally social activity or indeed social in the same way at all. It is also possible that the problematic outcomes used in this study do not capture the particular problems related to

social interaction in online poker settings, such as encouraging higher bets or greater frequency of play (e.g., Ocean & Smith, 1993; Hayano, 1983). Perhaps if these problems had been included the results pertaining to social interaction would have been different. By not including loss of money in this study, important nuances of gambling behaviour may not have been captured. However, doing so would have made it difficult to compare findings across the three platforms, as, according to the existing literature, monetary loss is not a key issue in problematic gaming or social networking. It may nonetheless be worthwhile to entertain the thought that we need a different set of criteria, for example, for different online platforms, as I have argued elsewhere (Kardefelt-Winther, 2014d). However, this goes against the current stream in addiction research, as exemplified in the DSM-5, which seeks to bring together different kinds of addictive behaviour under a common framework and to eliminate differences rather than explore them.

8. Summary and conclusions

Internet use and its problematic outcomes is a growing focus of research, receiving attention from academics, journalists, health workers, policymakers and the public. The attention and research has led to the inclusion of internet gaming disorder in the DSM-5 (APA, 2013) which is likely to further increase focus on these issues (Kardefelt-Winther, 2014d). However, despite almost 20 years of research little has been accomplished in terms of theoretical development. The dominant theory used in research remains a theory of addiction (Young, 1996) based on problem gambling and substance abuse behaviours and has little to do with internet use. Attempts have been made to improve the diagnostic criteria (e.g., Beard & Wolf, 2001; Ko et al., 2005; Petry et al., 2014) but these attempts have not engaged with the heart of the problem -- that the affordances of, and motivations for, using the internet are repeatedly neglected. Existing research on the problematic outcomes of internet use does not do justice to the variety of processes that may explain the problematic outcomes outside of a framework of addiction (e.g., Davis, 2001; Caplan, 2003; Kardefelt-Winther, 2014b). Existing research does not take into account that people may have motivations for spending a lot of time online that persist, despite some problematic outcomes, because the end result is still worth it (e.g., Larkin & Griffiths, 1998; Griffiths, 2010; Kardefelt-Winther, 2014d). Existing research does not help to distinguish fascination from compulsion (e.g., Charlton & Danforth, 2007), which is important in a society where internet use is ubiquitous.

This chapter will briefly review what the thesis set out to do, focusing first on the justification of the study and how it aimed to address the shortcomings of existing research. The findings will then be reviewed in the following section, together with a discussion of the

implications for research and clinical practice. Those sections will respond to the three questions that were asked in each of the empirical chapters:

Q1: Which variables from the addiction and uses and gratifications frameworks are significant predictors for problematic outcomes of internet use when variables from both frameworks are controlled for?

Q2: Should the assessment of problematic outcomes of internet use also consider the interaction between psychosocial well-being and motivations for use?

Q3: To what extent can the proposed causal processes of coping as illustrated in Figure 3.1 explain problematic outcomes of internet use?

This will be followed by a discussion of the shortcomings and limitations of this project and some reflections that may benefit future studies. In the final section, general conclusions are drawn and suggestions made for further development of research.

8.1 Justification

In the literature on internet addiction it is rare to find an author who takes a stance for or against certain perspectives on addiction. In internet addiction research, the addiction concept is often presented and used as if it was an unproblematic concept that requires no further debate. Such neglect of alternative perspectives is problematic (Gambino & Shaffer, 1979; Shaffer 1986; Shaffer & Kidman, 2003), because as Shaffer (1986) writes, there is great conceptual confusion in the study of addiction as researchers from different paradigms will

imbue addiction with meanings of their own. If researchers do not take a clear stance in regards to their interpretation of addiction and justifies their theoretical standpoint, it is difficult to judge whether their results and conclusions are valid given the theory. This thesis takes a stance against the dominant framework of addiction as a mental disorder, in favour of explanations focusing on processes of coping, and argues that more attention needs to be given to such alternative explanations.

This thesis addresses three issues in the study of problematic outcomes of internet use. First, by advocating a stance that focuses on processes of coping, researchers do not have to engage with the theorisation of addiction which despite decades of research still lacks a consensual definition (Shaffer, 2013) and continues to present a problem for researchers in this area, as studies use different definitions and are therefore not comparable (Byun, 2009; Petry et al., 2014). This has been the case in the study of addictions for a long time (Shaffer, 1986) and is unlikely to change with the invention of additional addictions and continued diagnostic expansion, as this further complicates conceptual work. However, a perspective of coping processes is in line with how many studies frame their findings but does not fall into the conceptual trap that the addiction concept entails. This is important, because it is partly the conceptual confusion that makes the addiction concept notoriously weak when it comes to assessing its causal processes (Peele, 1977). Understanding these causal processes is important in a society where internet use is ubiquitous because of the value in being able to distinguish between healthy, fascinated internet use and internet use that may indicate underlying psychosocial problems.

Second, the utility of the combined framework proposed in this thesis (Figure 3.1) is precisely that it enables an examination of the proposed causal processes underlying problematic outcomes of internet use, and does so by the use of multilevel methods. As Williams et al. (2008) write on the topic of online games, there has been a tendency to "consider games a black box of effects sources rather than the complex and public social medium it increasingly is" (p. 1008). The same argument can be applied to internet use in the study of its problematic outcomes, as mediating effects of social influences or its interaction with motivations for use (e.g., Katz, 1996) have rarely been considered. This is problematic, because an in-depth understanding of why people use the internet is necessary in order to understand the problematic outcomes that follow (e.g., Shen & Williams, 2010; Smahel & Blinka, 2011; Kuss et al., 2012; Kardefelt-Winther, 2014d). The framework proposed in this thesis is grounded in two different theoretical perspectives which is an approach that has been recommended in the literature, because it accommodates an integration of the multiple processes that are assumed to lead to problematic outcomes (Griffiths, 2005). The framework may accommodate further theoretical expansion by, for example, accounting for the positive outcomes of internet use.

Third, the perspective of problematic outcomes taken in thesis does not remove agency from the user and avoids portraying them as helpless victims of an addiction (e.g., Davies, 1992). This is important given the ubiquity of internet use, because a perspective of problem users as helpless victims may stigmatize people for life, both in their own eyes and in the eyes of others (Davies, 1992). Such a view is not helpful in a society where many young people grow up using the internet a lot. This constitutes one of the risks of medicalizing behaviours that may, given some time, become accepted as normal (Conrad, 2007).

8.2 The Utility of Combining Addiction and Uses and Gratifications Frameworks

This thesis combined addiction and uses and gratifications frameworks into one combined framework. The argument was that problematic outcomes of internet use occur as a consequence of internet-based coping processes motivated by a need to cope with life difficulties. To support the combination of addiction and uses and gratifications frameworks it was first necessary to examine whether people's motivations for use could tell us something about the processes underlying problematic outcomes that could not be understood by only considering a person's psychosocial well-being (Q1). On all three platforms, a majority of the relationships based on an addiction framework, measured by associations between people's well-being and problematic outcomes, were not significant when their motivations for use were controlled for (see Table 5.1, Table 5.2, Table 6.1, Table 7.1, Table 7.2). Furthermore, relationships based on a uses and gratifications framework, measured by the relationship between people's motivations for use and problematic outcomes, tended to be significant in most regression models. Finally, in the cases where relationships from both frameworks were significant, the motivations were the stronger predictors. These results indicate that future studies of problematic outcomes of internet use, irrespective of the platform, would benefit from also considering people's motivations for use. This supports Katz (1996) and Shen and Williams (2010) argument that our motivations for using the internet have a large impact on the effects, which needs to be considered when the outcomes are problematic (Smahel & Blinka, 2011).

8.2.1 Comparison of significant moderating effects across platforms

Although the findings presented in section 8.2 seem to suggest that motivations better explain problematic outcomes of internet use than psychosocial problems, there were

294

additional findings that showed why a combined perspective is helpful. Moderation analysis was performed to understand whether the direct effect of predictor variables on an outcome variable depended on a third, moderating, variable. In this thesis, moderation analysis was used to test the assumption (H3) that the relationship between people's motivations for using the internet and problematic outcomes was moderated by their psychosocial well-being. Based on the proposed causal model in Figure 3.1 (see Chapter 3, p. 70) it was assumed that people's psychosocial well-being would interact with people's motivations for using the internet in predicting problematic outcomes. The question asked in relation to this hypothesis was whether it was important to also consider the interaction between psychosocial well-being and motivations for use in the study of problematic outcomes of internet use (Q2).

The findings in this thesis showed that, for online gamers and online gamblers who experience high levels of problematic outcomes, stress and self-esteem moderated the relationship between escapism motivations and problematic outcomes. This means that the effect of escapism was dependent on the level of stress or self-esteem and if a person was not stressed or had high self-esteem, escapism as a motivational precursor to gaming or gambling did not lead to more problematic outcomes but fewer. Furthermore, recall the proposition made in Chapter 4 (section 4.4, p. 101) that a different set of variables may explain problematic outcomes for those who experience many problems compared to those who experience few. This set of findings show that these interaction effects can, partly, explain why some people experience more problematic outcomes than others, since no interaction effects were found in the full sample. It also supports the proposal that escapist online gaming and gambling can be explained as a coping process according to Lazarus and

Folkman's (1984) definition of coping, and also supports Wills (1986) definition of coping processes as buffer interactions, as these are visible in analysis as interaction terms between predictor variables.

At the same time, these results caution that studies examining motivations for use as direct causal predictors of problematic outcomes (e.g., Yee, 2006; Caplan et al., 2009; Kuss et al., 2012; Kneer & Glock, 2013) need to account for the moderating effects of psychosocial well-being. Both Yee (2006) and Kuss et al. (2012) found that escapism was the strongest predictor of more problematic outcomes of online gaming. This was also the case in this thesis where the main effect of escapism was the most stable positive predictor of more problematic outcomes on all three platforms. However, the analytical approach used here allows some critique to be levelled at the studies by Yee (2006), Caplan et al. (2009) and Kuss et al. (2012), as the findings showed that the effect of escapism depended on stress or self-esteem. This reaffirms Williams et al.'s (2008) recommendation that studies concerned with effects need to consider more complex models and not rely solely on analysis of direct relationships.

Overall, it was interesting to note that the findings relating to online gamers and online gamblers were largely similar in regards to the moderating effects, while the findings for users of social networking sites was not similar to the other two populations. This raises the question of whether online gamers and online gamblers belong to a certain demographic who exhibit similar online behaviours, or whether it is the affordances of the platforms that facilitate certain behaviours and thus attract particular people. The results from this project tentatively suggests that the affordances of the platforms may play a role since no

moderating effects were found for Facebook users; social networking does stand out as an activity that is rather different from gaming and gambling while the latter two share some common affordances, for example potential for immersion and flow. This could have facilitated processes revolving around escapism motivations. Furthermore, online gamers and online gamblers did not seem to differ too much from the Facebook users in terms of psychosocial characteristics (see Table 4.1 in Chapter 4). However, the Facebook users were more evenly distributed in terms of gender, which could also explain the different results. Males have been suggested as more likely to experience problematic outcomes of internet use, which could explain why the findings for online gamers and online gamblers include a number of significant moderating effects. Finally, it is possible that if true problem-users had been captured in the Facebook sample, which was arguably not the case, the results might have revealed significant moderating effects for that population as well.

8.2.2 Comparison of significant mediating effects across platforms

Mediation analysis was performed to better understand the causal nature of the relationship between psychosocial well-being and problematic outcomes of internet use. It was proposed that the relationship between people's psychosocial well-being and problematic outcomes would be at least partly mediated by their motivations for use (H4, Figure 3.2). The question asked in relation to this hypothesis was whether the processes illustrated in Figure 3.2 (Chapter 3, p. 75), where the association between psychosocial well-being and problematic outcomes is partly explained by motivations for use as a mediating variable, would better explain problematic outcomes compared to an examination of the direct effects only (Q3). If significant indirect effects were found, this would question the addiction framework and show the utility of a combined framework that includes motivations for use.

As in the previous section, the results involving escapism, stress and self-esteem were promising. The effect of stress on problematic outcomes was mediated by escapism across all three platforms. This means that stress has an influence on problematic outcomes partly through its influence on escapism. In practice, this suggests that it is not necessarily problematic if an individual is stressed, but since those who are stressed are more likely to go online to escape negative feelings, and escapism leads to problematic outcomes, those with higher levels of stress are more likely to experience problematic outcomes. For online poker players, the indirect effect of stress was larger than the total effect, and the direct effect was close to zero. This evidences a case of complete mediation where stress only has an effect on problematic outcomes via its influence on escapism. For users of social networking sites and online gamers, the indirect effects were significant but partial while the direct effects were not significant. This means that a framework that only assesses the direct effect between stress and problematic outcomes, such as the addiction framework (see Figure 3.1, p. 70), neglects the important influence that escapism has on this relationship. The findings presented in this thesis suggest that it does not matter so much if people who are stressed go online to game or gamble per se, what matters is whether they do it with the purpose of escaping from real life. However, as stress influences the need to escape, as shown in the path models, it seems likely that the more stressed people are the more likely they are to also play games or gamble to escape the stress, which may lead to further problematic outcomes.

Self-esteem indirectly predicted more problematic outcomes for online gamers and online gamblers, but not for users of social networking sites. This was surprising as the literature suggests that individuals with low self-esteem use social networking sites to compensate for

this (e.g., Barker, 2009; Tazghini & Siedlecki, 2013; Ellison et al., 2007; Steinfield et al., 2008). It is possible that escapism as a proposed mediator was not the most suitable for social networking platforms, due to the difficulty of separating escapism motivations from social motivations on such sites. This issue may call for new ways to assess motivations for using social networking sites that are not yet accommodated by a uses and gratifications perspective (Alhabash et al., 2012). Additional analysis not included in this thesis showed that self-esteem was mediated by social motivations rather than escapism, which further problematizes the distinction between escapism and social motivations on Facebook.

Finally, the World of Warcraft and Facebook chapters both found that the direct effect of loneliness on problematic outcomes was mediated by social motivations. For both World of Warcraft players and Facebook users, loneliness was directly related to more problematic outcomes as well as indirectly related to fewer problematic outcomes through social motivations. However, the indirect effect was stronger for Facebook users. This indicates, overall, that use of these platforms for social purposes reduces the problematic outcomes of loneliness somewhat, and that this reduction is greater amongst Facebook users than World of Warcraft players (H5). This may be because using Facebook acts as a complement to real world social interaction (Kujath, 2012; Staksrud et al., 2013) while World of Warcraft may be both a complement and sometimes a substitute. When World of Warcraft is used as a substitute rather than complement, this may not lead to a reduction in problematic outcomes. This relationship was not found for online gamblers which may indicate that online poker is a less social activity, as argued by Griffiths and Parke (2002). Online poker as an activity may lack the affordances that allow it to compensate for feelings of loneliness,

and in this respect online poker may be different from the social nature of casino play (Ocean & Smith, 1993).

8.2.4 Processes behind problematic internet use: what does it really mean?

There are some explanations available in the literature for why moderating and mediating processes involving escapism, stress and self-esteem were significant for online gamers and gamblers. Considering the platforms, both problem gambling (e.g., Nower, Derevensky, & Gupta, 2004; Wood, Gupta, Derevensky, & Griffiths, 2004; Getty, Watson, & Frisch, 2000; Gupta & Derevensky, 1998; Powell, Hardoon, Derevensky, & Gupta, 1999; Wood & Griffiths, 2007; Wood et al., 2007b) and problem gaming (Yee, 2006; Caplan et al., 2009; Kuss et al., 2012; Kardefelt-Winther, 2014a; Smahel & Blinka, 2011; Kneer & Glock, 2013) has been related to escapism motivations in a number of studies. Literature on gambling supports the findings presented here that problem gambling increases during moments of stress for those who experience high levels of problematic outcomes (Figure 7.2, p. 249). This is explained by people's need to narrow their attention during disturbing life situations (Blaszczynski, Wilson & McConaghy, 1986; Lesieur, 1979) as proposed in this thesis. The findings in this thesis further suggests that problem gaming may be a consequence of similar processes, specifically as a need to narrow attention during disturbing life situations related to low self-esteem or high stress. These findings also contribute to the literature on avoidance-coping (Lazarus & Folkman, 1991) and the stress-coping model (Shiffman & Wills, 1985; Wills, 1986; Wills & Hirky, 1996) as it shows how internet use may provide new avenues of coping that need to be better understood, as previously suggested by Whang et al., (2003). However, internet use may not be particularly efficient as a coping behaviour which could lead to maladaptive patterns of use with mostly negative outcomes (de Abreu, 2011). This supports

Lazarus and Folkman's (1984) claim that coping may lead to problematic outcomes if the problems are not addressed by the coping behaviour, but rather used to avoid problems, and may pose additional risks for those who try to cope with life difficulties via internet use. However, another interpretation is that people's persistence in problematic gaming and gambling shows that such coping behaviours can make a person feel better even though they do not solve any problems (e.g., Billings & Moos, 1981; Collins, Baum & Singer, 1983), which makes it difficult to say whether it is a blessing or a curse, or both. Further research should focus on exploring these processes in greater detail to make clear the distinction between successful and unsuccessful processes of coping through internet use.

The findings regarding mediating effects have an impact on how problematic outcomes of internet use need to be assessed and treated. For online poker players in particular, where the direct effect of stress on problematic outcomes was completely mediated by escapism, the perspective of an addiction framework is inadequate because of the lack of attention given to motivations for use, as an addiction framework would likely suggest that stress leads directly to more problematic outcomes. As a consequence, therapy for problem online gamblers relying on this framework may focus on treatment that reduces stress to curb the problematic outcomes. However, the results in this thesis suggest that such efforts may be less effective as the effect of stress is completely explained by its influence on escapism. This means that interventions need to also understand where the motivation to escape comes from, which may partly be because of stress, but also why escapism is associated with more problematic outcomes in this context; whether it is due to, for example, the time spent on poker or the money lost. This is also relevant for those who play online games and use social networking sites; since those who are stressed are also more likely to go online to escape

negative feelings, and escapism leads to more problematic outcomes, those with higher levels of stress are more likely to also experience problematic outcomes. As Shaffer and Kidman (2003) argued, a multiplicity of perspectives is crucial to develop efficient methods for treatment and the efficacy of such an approach is exemplified here by combining two theoretical perspectives. The findings presented in this thesis suggests that clinicians should be concerned not only about identifying direct predictors of problematic use, such as psychosocial well-being, but rather focus on how issues with well-being may trigger patterns of media use that can lead to problematic outcomes.

This suggests that for purposes of treatment of problem users of online games, of online poker or of online social networking sites, it may initially be more useful to find alternative modes for escapism and not letting problem users rely solely on gaming, gambling or online social networking for relief. In other words, findings suggest that interventions at the motivational level may be useful. As Brown (1993) and others (Mello and Mendelson, 1965; Mello, McNamee & Mendelson, 1968; Cohen, Lebison, Faillace & Speers, 1971) argued in relation to drinking problems, it was always possible for problem drinkers to change their behaviour given alternative, equally interesting, activities to pursue (p. 254). Once alternative and less risky coping behaviours have been established for problem users, it will be easier to address the source of the problem which then may or may not include dealing with stress. This intervention process, where motivations related to problematic use are first established and only afterwards are psychosocial issues addressed, has been tried in cases for problematic internet use and been suggested as a useful way forward (de Abreu & Goes, 2011). Crucially, this requires a thorough understanding of the underlying processes of

problematic internet use which is facilitated by also considering motivations for use, as shown in this thesis.

8.3 Reflection on Challenges and Limitations

As with any research project, there were a number of challenges that in themselves provide insights that may not be gleaned from statistical analysis but rather from the thoughts and reflections of the researcher. There were also a number of limitations that are important to mention, as they impact how the findings can be understood in our complex environment. This section will discuss some important challenges and limitations of the project.

Reflection on challenges

One of the greatest challenges in this project was the question of how to engage with the literature on internet addiction, while simultaneously questioning the addiction concept and its application to internet use. Essentially, I needed to find a way to engage with the literature on internet addiction and its claims without talking about addiction. This is why it was important to explain in Chapter 1 how I use the different concepts of excessive internet use, problematic outcomes and internet addiction, because to me each concept reflects important nuances that are crucial to consider. The differences between these concepts have not been given enough attention in the literature so far where they tend to be treated as more or less synonymous (Widyanto & Griffiths, 2006). This is problematic, because it should not be assumed that excessive use always leads to problematic outcomes, just as it should not be assumed that problematic outcomes always signify an addiction. While it is difficult to challenge the latter point due to the power and authority of the DSM in defining what constitutes an addiction, at least we as researchers can be more attentive to the

various nuances of the concepts we use and the implications that such nuances may have for the interpretation of our findings.

This leads to a second point, which is related to the operationalisation of problematic outcomes in this thesis. It is usually taken for granted in the literature that problematic outcomes are always problematic, irrespective of the experiences of the individual and their life context. This view was partly challenged in Chapter 2 (p. 58) where Young's IAT was broken down to show how several of the questions may, for some people, reflect new ways of life that indicate high engagement rather than a problem. This distinction is difficult to make but vital to consider. With the internet being such a prominent tool for entertainment and communication it cannot be stressed enough that people have legitimate reasons for using the internet to the point of excess and this should not be misread as necessarily problematic behaviour.

It is reasonable in this respect to consider Livingstone's (2013) argument based on research on children's internet use, that "the identification of online risk does not imply that harm will follow, and nor that all users will be equally affected" (p. 17). I would argue that, similar to Livingstone (2013), the identification of problematic outcomes in a population does not equal actual harm. Even with the measures for problematic outcomes used in this thesis, aimed to represent more or less objective problems, it is unclear what, if any, the long-term effects of these behaviours are and whether there are also benefits that we do not yet understand. It is also unclear whether the users themselves perceive these problematic outcomes, defined by researchers, as real problems; since the definition of problematic outcomes is often externally imposed on users by researchers, the face validity is

questionable. What is needed is more qualitative work to examine in detail what excessive internet users, and their families and partners, have to say about the problematic outcomes, rather than persist in using measurements of behaviour that we think, based on research from drug abuse(!), may be problematic (e.g., Petry et al., 2014). Perceptions of problematic use may also change over generations or across cultures, which makes it important to study this phenomenon continually and cross-culturally.

Reflection on limitations

There were also a number of limitations to the research presented in this thesis that should be mentioned. The cross-sectional nature of the data means that it is difficult to say anything about causal effects, or whether these effects are persistent or change over time. One question that could not be answered by this study is whether people grow out of the tendencies to use the internet for coping purposes, or whether they learn to work around the problems that this form of coping creates, which may lead to reductions in problematic outcomes in the future. This raises the question of whether it is possible to learn to use the internet for coping purposes in a way that does not cause problematic outcomes, and what the benefits of this might be compared to other forms of coping. It may be worthwhile for future research to conduct longitudinal studies that follows cohorts over a considerable period of time to better understand how problematic outcomes of internet use impact daily life and whether they change or persist over time. This would also enable an investigation of whether problematic outcomes are actually problematic in the long term. Thus, it might be said that the value in this thesis rather lies in its theoretical contributions by highlighting how separate frameworks may usefully be brought together for future work, rather than providing definitive answers to the processes behind problematic use. While some processes

were sketched by the findings in this project, these should be interpreted as illustrating the general processes behind problematic use rather than providing conclusive evidence. Still, the processes uncovered here provide a good starting point for future research interested in exploring these issues.

It needs to also be said that the measure of problematic outcomes in this study in fact constituted one of its limitations, because the questions did not focus on how people perceive their own internet use and whether they consider these "problems" as truly problematic. However, this would have made the findings largely incomparable to other work in this area, but it may be worth considering for future projects. While the aim here was to use a set of more or less objective problematic outcomes, some people may not feel that losing sleep over a hobby is a problem which questions the face validity of the measurement. It is also unclear, as reflected above, whether losing sleep over a hobby really leads to long term problematic consequences or not, and whether it may be more or less risky for certain groups of people to do so.

8.4 General Conclusions and Recommendations for Further Research

Kirk (2005) wrote that society has a seemingly insatiable capacity to accept and endorse newly minted mental disorders that help to define and explain away its emerging concerns. Indeed, the past decade has seen an upsurge in research on the problematic outcomes of internet use and attempts to classify it as a mental disorder and an addiction, culminating in the inclusion of internet gaming disorder in the DSM-5 (APA, 2013). However, this thesis has reviewed a number of issues with classifying behaviours as addictive. These issues range from epistemological and theoretical disagreements between the multiple stakeholders that

are involved in the study of addiction (Shaffer, 1986; Conrad & Schneider, 1992; Brown, 1993; Frances & Widiger, 2012) to the strong biological rooting of the addiction concept (Peele, 1977) and the diagnostic expansion that threatens to make the concept diluted and meaningless (Brown, 1993; Frances & Widiger, 2012). These issues continually lead to problems for clinicians, researchers, healthcare providers, policymakers and legislative bodies (e.g., Marlatt et al., 1988; Shaffer, 1987; Shaffer & Robbins, 1991; Shaffer, 2013). Furthermore, some scholars claim that the research produced so far has been notably unsuccessful in discovering the causes of mental disorders generally and of addiction specifically (e.g., Frances & Widiger, 2012; Peele, 1977) precisely because of the aforementioned issues. These difficulties naturally transfer to the more recent study of internet addiction for which theoretical development has also been lacking (Widyanto & Griffiths, 2006; Shaffer, 2000; Kardefelt-Winther, 2014b). Widyanto and Griffiths (2006) called this lack of theoretical development "surprising", but in light of the debates within the study of addiction, it rather seems understandable.

I suggest, for future research, that four categories of internet users could be considered in the study of problematic outcomes of internet use, in order to avoid confusing people with different usage patterns, motivations and outcomes. The first group might be termed 'general public' - people who engage in an ordinary or everyday amount of internet use and do not experience any notable problematic outcomes from this. Their needs and motivations for internet use can be assessed through a uses and gratifications framework. The second group can be called 'high users' - people who use the internet a great deal but who experience few problematic outcomes. These people can be understood as dedicated or fascinated internet users, perhaps avid hobby gamers or gamblers who enjoy moments of

rewarding internet use during evenings and weekends. The third group consists of people who may seem addicted, or seem to be problem users, because they use the internet a great deal and experience a number of problematic outcomes from this. These people have been the major focus of this thesis, represented as the group that experiences high levels of problematic outcomes from their internet use. It has been suggested here that their problematic use is the consequence of a coping behaviour taken to excess, which has both positive and negative outcomes for them; thus we can call them 'excessive users'. The fourth group, not considered in detail in this study, is people who experience problematic outcomes from their internet use because they are struggling with other major, underlying, psychological disorders which hinder daily functioning and for whom internet use provides a meaningful and accessible activity.

This proposed typology raises the question of how to engage with each group on a societal level. Drawing on the findings of this thesis and on the wider literature on addiction and mental disorders, I suggest some future directions.

The first group may be judged unproblematic, and could be studied in order to understand better the uses and gratifications associated with various internet platforms and the implications this has for how the internet is used in society as a whole. Studying this group of people would help in improving the uses and gratifications framework in a way that, above all, considers how the affordances of new media platforms impact upon the gratifications sought. Achievement motivations, for example, were explored in this study even though they have little precedent in uses and gratifications research. The analysis relying on measures of achievement was not particularly successful in this thesis, but it is undeniable

that the desire for achievement provides, for many people, a strong draw for online gaming and gambling. Yee (2006) seeks to extend the uses and gratifications framework to include online gaming, achievement motivations being one of his discoveries; it is important that this line of research continues so that measurements improve and so that the unique affordances of further and new platforms are examined.

Consideration of the second group is more important in relation to the arguments of this thesis, since these people may be wrongly identified as problem users or as addicted because of their high level of engagement (e.g., Charlton & Danforth, 2007), even though they do not experience many problematic outcomes. This could be a problem both for their personal lives and for their value as research participants. I believe most people suspected by concerned relatives of being addicted fall within this group. However, this thesis has argued that in many such instances, this concern can blind people to the possibility that high levels of internet use serve an important purpose for them, allowing them to follow their particular interests or chosen passion online. Problematically, this confusion between fascination and compulsion may be exacerbated by moral panics instigated by media reports on the perceived risks of internet use facilitated, involuntarily perhaps, by researchers who have not seen the ambiguity or possible overlap between 'high' and 'excessive' use. Wood et al. (2004) discuss how media coverage of video game-playing has long been prominent in steering the public debate, and recommend that researchers studying the potentially problematic effects of gaming pay careful attention to how their studies may be reported in the media. They write that if adequate explanations of the research are not provided media reports may draw unwarranted conclusions about findings, which can have unfortunate

consequences for the study participants, video game players, their parents, partners, employers and legislators.

Furthermore, and as highlighted in this thesis, there are important differences between people who experience very problematic outcomes and those who only experience a few such outcomes. If people from this second group are used as a basis for research, on the basis of their high levels of internet use rather than their high levels of problematic outcomes, this may confuse the findings of research (e.g., Russell, 1996) while not revealing much about the processes that underlie high levels of problematic use, since the population is inappropriate for this purpose. For future studies it is important to recruit participants according to their reported problematic outcomes of internet use and to analyse the data on outcomes separately from data on levels of use. As reflected earlier, we know little of the perceptions of participants regarding their internet use and its consequences, which presents a challenge that could be usefully explored in the future via qualitative research methods.

The third group has been considered for the major part of this thesis and the findings have been discussed at length. These show that problematic outcomes of internet use can be understood through a complex process depending both on an individual's psychosocial well-being and on his or her motivations for use. For this group, my recommendation for relatives and clinicians, drawing on the findings in this thesis, is to engage with the person and seek to better understand their purposes and motivations for internet use. I suggest that this group of people is unlikely to benefit from being labelled 'addicts' or assumed to have lost control of their internet use. Rather, I suggest, these people have understandable, though not

always healthy, motivations for going online that somehow serve for them an important purpose. It may be a way for them to escape negative feelings, as suggested here, in which case the person may be better off if they could receive some help with these negative feelings and with solving their problems rather than persistently escaping to the internet. This help can come from concerned parents or partners in the first instance. Such support would likely be more helpful than complaints, but would require people truly to engage with the person's internet use and to consider it as an important activity rather than a waste of time or an addictive behaviour. In some cases this may be easier said than done, especially if the excessive internet use represents a way of coping with significant life difficulties. Ultimately, if the problematic outcomes persist, therapeutic interventions may be helpful.

It is also important to acknowledge that potential individual differences for people in this third group might make some of them less susceptible to the problematic outcomes of internet use and the processes described in this thesis. For example, as computer gaming is becoming a legitimate sport we may see an upsurge of highly able gamers who play games to the extent that it has a substantial impact on their life (e.g., Szablewicz, 2010), perhaps even a negative impact. However, these gamers might not play because they are coping with real life issues, as described in this thesis, but because gaming is a viable career option which requires a lot of practice. This would rather suggest that they are high achievers and do not struggle with issues of well-being.

The fourth group of people is beyond the specific scope of this study and of my knowledge. In line with other researchers, and also in line with my recommendations for the third group, I suggest that their problematic internet use is a consequence of underlying problems which

may or may not be amenable to therapeutic efforts. Some clinicians may label this group as addicted, if that proves helpful in generating and justifying clinical resources. But since the field of addiction study has so far not had much success in explaining why addiction occurs or presenting valid treatment options, I suggest that even for the third and fourth groups, there is merit in recommending that researchers seek alternative explanations rather than persisting with a framework that has so far had limited success in understanding and resolving these processes.

The typology presented here also raises the question of how the study of internet addiction, or problematic outcomes of internet use, can benefit from a more holistic approach where knowledge from a variety of paradigms is considered together (Griffiths, 1996, 2005). This is one of the questions that this thesis sought to answer by its challenges to the dominant addiction framework. Several authors have argued that approaching the question of excessive or problematic use from a perspective of addiction has a number of drawbacks, chief of which is the inability to consider alternative explanations for why someone cannot stop, or does not want to stop, doing whatever it is they do too much (Gambino & Shaffer, 1979; Shaffer, 1986; Davies, 1992; Shaffer & Kidman, 2003; Conrad, 2007). These issues, together with the findings in this thesis, has led me to believe that it would be better to focus solely on the problematic outcomes that some people experience as a consequence of their engagement with an activity, rather than focus on the addiction concept that these problems are regarded as symptomatic of. Essentially, some people find it useful to group certain problems, typically related to a strong desire to engage in an activity, a subjective feeling of loss of control and a failure to change the behaviour, under a common label of addiction. One issue that follows is that the addiction concept then becomes an explanation

in itself for why someone experiences these problems. Addiction is both a cause and consequence: people are addicted because they experience these problems and they experience these problems because they are addicted. If the addiction concept was taken out of the equation, researchers would be able to focus on identifying the causes of these problems without the added conceptual confusion, epistemological challenges, and disciplinary disagreements (Shaffer, 1986) that the addiction concept brings. The findings in this thesis have shown, for example, that the processes underlying problematic outcomes of internet use can, in some cases, be identified and explained as a result of the interaction between an individual's psychosocial well-being and their subsequent motivations for going online. In this thesis I have referred to such behaviour as a coping process, because theories of coping have previously identified this chain of events and concluded that people are sometimes motivated to do a wide variety of things in order to feel better during times of low well-being, which can have problematic outcomes if the behaviour persists (Shiffman & Wills, 1985; Lazarus & Folkman, 1984; Wills & Hirky, 1996). This explanation makes sense in light of the findings presented in this thesis for users with high levels of problematic outcomes, where higher levels of certain motivations for use, typically escapism motivations, were related to even more problematic outcomes for those with low well-being. Still, some researchers (e.g., Shiffman & Wills, 1985) have argued that this coping process may also explain addictive behaviours. Indeed, coping processes may plausibly be defined as addictions since the repeated coping behaviour may be followed by problematic outcomes. However, this puts us back at square one where we have to ask, again: what exactly is addiction and wherein lies the utility of this concept? As stated in Chapter 1, I maintain that applying the label of addiction causes further complexity while bringing few advantages.

This thesis has shown that it is possible to leave the addiction concept aside and focus instead on the processes underlying problematic outcomes of use, which can be helpful both in identification of problem-users and for defining treatment practices. I argue based on the findings presented here that the study of problematic outcomes of internet use should be restructured to incorporate theory that focuses on motivations for use to account for why people chose to spend time online and treat it as a goal-directed coping behaviour rather than addiction. This argument challenges the predominant view of the problem user as someone who has lost control and acts without agency, and takes a stance against this view in the ongoing debate in the study of addiction (Shaffer, 1986). It also challenges Griffiths (1996) claim that the way to determine whether behavioural addictions are truly addictive is to compare them against clinical criteria for other addictions. Considering the unresolved debates in the study of addiction and the problems that this concept brings, it may be easier to study problem behaviours by seeking to understand why such problems occur without bringing into it the complicated question of addiction and its theoretical preconceptions. This is highly relevant as the diagnostic expansion of behavioural disorders in the DSM continues to spawn new addictions, which has implications for the ways in which society learns to accept or reject behaviour that does not always correspond to the norm (Conrad, 2007). Shaffer (2000) writes that while the addiction concept has some utility in terms of identifying common patterns of seemingly different behaviour, which is a goal of the DSM, this does not necessarily facilitate research on, or a greater understanding of, the problem behaviour in itself (p. 162). The crucial task for future research is to establish a working theory for why problematic outcomes of internet use occur. Such a theory needs to make sense given our contemporary, intense engagement with the internet to avoid the risk of

over diagnosis, but at the same time needs to have the form of practical utility that is required for identification of true problem cases.

This thesis took a small step forward in this task by asking whether problematic outcomes of internet use can be explained as a coping process for life problems. This was done against the background of the two separate claims that excessive media or internet use may be a coping behaviour for life problems (e.g., Katz & Foulkes, 1962; Young, 1996; Grohol, 1999; Armstrong, 2000; Young, 2011) and that coping behaviour is sometimes followed by problematic outcomes (e.g., Shiffman & Wills, 1985; Lazarus & Folkman, 1984; Armstrong et al., 2000; Smahel & Blinka, 2011). Findings presented here indicated some support for this proposition even though the support was limited to certain platforms and motivations. This was expected since only a limited number of platforms, motivations and issues with psychosocial well-being were examined in this particular project, but it opens up avenues for future research in this area. It also provides a tentative theoretical framework and research methodology that may be applied in future work that aims to explore and extend the view of problematic outcomes of internet use as a consequence of a coping process.

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Appendices

Appendix I – Lists of websites used for data collection

List of poker sites used for data collection:

http://www.liquidpoker.net
http:// www.pokerforums.org
http://www.pokercrack.com
http://www.twoplustwo.com
http://www.thehendonmob.com
http://www.pokerstrategy.com
http://www.cardschat.com

List of World of Warcraft sites used for data collection:

http://www.arena-tournament.com
http://www.mmo-champion.com

Appendix II - Questionnaires

Q323   Welcome, this survey contains questions about general internet use of particular platforms, and the thoughts, feelings, and outcomes associated with such use. It also asks some questions about you, and who you are in general. The survey takes about 10-15 minutes to complete.Any participation is fully voluntary, and you may stop the survey at any time. All information provided will be treated with full confidentiality, the data will be anonymized and made untraceable back to you. No records of IP-addresses are stored by the survey software. By going to the next page you agree to participate in the survey under the conditions mentioned above. If you are below the age of 13, please do not fill out this survey as doing so would require parental consent. Thank you for your participation!

Q307 The first questions are some general questions about you so that we will be able to contextualise the findings. Remember that none of these answers can or will be traced back to you.

Q1 How old are you?

Q308 Are you female or male?
❍   Female
❍   Male

Q2 Which country do you currently live in?

QSPEC1 Did you move to a different city or country during the past two years ?
❑   Yes
❑   No

Q230 Please indicate which of the three following online things you do regularly (at least once a week).   You may select more than one option.
❑   Using Facebook
❑   Playing World of Warcraft
❑   Playing Online poker

Q231 Please select which of the following activity you would most like to answer questions about. If you would like to answer questions about more than one you will be given this option in the end.
❍   Facebook
❍   Online Poker

FB1 On average, how many hours per day do you spend on Facebook?
❍   Less than 1 hour
❍   Between 2 and 3 hours
❍   Between 3 to 5 hours
❍   More than 5 hours

QFG2 For how long, approximately, have you owned a Facebook account?
❍   Less than 6 months
❍   Between 6 months and a year
❍   Between 1 and 3 years
❍   More than 3 years

The following questions ask about your general facebook use. Please indicate how much you agree or disagree with the following statements.

QFE1 Using Facebook helps me avoid thinking about some of my real life problems or worries.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFE2 I log on to Facebook to relax for a while.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFE3 Using Facebook allows me to escape the real world for a while.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFPT1 I log on to Facebook to be entertained.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFPT2 I log on to Facebook to have something to do when bored.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFPT3 I sometimes stay logged on to Facebook even when I'm not really doing anything actively on it.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFPT5 I sometimes keep checking Facebook even though I'm not really enjoying it.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFPT5 I sometimes find myself randomly browsing photos/profiles with no real interest.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFS1 The people I talk to on Facebook give me a sense of community.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFS2 I feel lonely when I can't log on to Facebook.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFS3 I spend time on Facebook to have something to do with others.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFS4 I enjoy chatting with other people on Facebook.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFU1 I use Facebook to get to know people with whom I have something in common.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFU2 I use Facebook to stay in touch with friends.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFU7 I feel like time goes by quickly when I'm on Facebook.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFU8 If I would have new emails, notifications or interesting comments in my newsfeed, I would feel happier after using Facebook.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QFU9 If I would have no new updates or interesting comments in my newsfeed, I would feel down or disappointed after using Facebook
- ⭘ Strongly Disagree
- ⭘ Disagree
- ⭘ Neither Agree nor Disagree
- ⭘ Agree
- ⭘ Strongly Agree

The following questions ask about your thoughts and feelings about using, and not using, Facebook.Please indicate whether the following is true or false for you.

QOYF1 Do you feel preoccupied with Facebook? (think about previous online activity or anticipate next online session?)
- ⭘ Yes
- ⭘ No

QOYF2 Do you feel the need to use Facebook with increasing amounts of time in order to achieve satisfaction?
- ⭘ Yes
- ⭘ No

QOYF3 Have you repeatedly made unsuccessful efforts to control, cut back, or stop using Facebook?
- ⭘ Yes
- ⭘ No

QOYF4 Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop Facebook use?
- ⭘ Yes
- ⭘ No

QOYF5 Do you stay on Facebook longer than originally intended?
- ⭘ Yes
- ⭘ No

QOYF6 Have you jeopardized or risked the loss of a significant relationship, job, educational career opportunity because of Facebook?
- ⭘ Yes
- ⭘ No

QOYF7 Have you lied to family members, therapist, or others to conceal the extent of involvement with Facebook?
- ⭘ Yes
- ⭘ No

QOYF8 Do you use Facebook as a way of escaping from problems or of relieving a dysphoric mood (e.g. feelings of helplessness, guilt, anxiety, depression?)
- ⭘ Yes
- ⭘ No

FB Intro2 The following questions ask about what you do on Facebook, and how you feel after using Facebook.Please indicate how often the following is true for you.

QOMF1 How often do you feel a sense of relaxation after using Facebook?
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QOMF2 How often do you feel happier after using Facebook?
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QOMF3 How often do you get a rush or a sense of excitement out of using Facebook?
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QOMF4 How often do you feel better about yourself and your life situation after using Facebook?
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QOMF5 How often do you feel worse about yourself and your life situation after using Facebook?
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QFU3 I write new Facebook status updates to show others how I'm feeling or what I'm doing during my day.
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QFU4 I upload photos to Facebook to show my friends what I'm doing.
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QFU5 I usually chat in real-time with people on Facebook.
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QFU6 I use Facebook to browse photos of others and to look at their profiles.
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

These questions ask about positive and negative things with your Facebook use, and some questions about internet use in general.Please indicate how much you agree or disagree with the following statements.

QOLF1 I sometimes lose sleep because of the time I spend using Facebook.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QOLF2 I sometimes skip meals or delay my eating because I am busy using Facebook.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QOLF3 I have had conflicts with my partner or parents over the time I spend on Facebook.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QOLF4 I have lost contact with some friends because I rather spend time on Facebook.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QOLF5 My school/job performance has suffered because of the time I spend on Facebook.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QOSF1 I tend to spend more time online when I have other boring tasks I need to take care of.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QOSF3 I spend more time on Facebook when I feel down.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOSF4 I spend roughly the same amount of time on Facebook every day.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOMF6 If I feel better or worse after using Facebook depends mostly on who I've been talking to, or what I've been doing.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeF1 Using Facebook has increased my language skills.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeF2 Using Facebook has increased my social skills.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGF1 My experience on the internet and/or in videogames has made me more understanding of those different from myself.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGF2 I have learned something new about another culture from surfing the internet, playing online games, participating in online communities or forums, etc.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGF3 I think the internet offers an important opportunity to get to know people from different backgrounds and different places.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGF4 I think that using the internet and/or playing videogames makes people more open to other cultures.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

WoW1 On average, how many hours a day do you spend on World of Warcraft?
- ❍ Less than 1 hour
- ❍ Between 2 to 3 hours
- ❍ Between 3 to 5 hours
- ❍ More than 5 hours

QWG1 For how long, approximately, have you been playing World of Warcraft?
- ❍ Less than 6 months
- ❍ Between 6 months and 1 year
- ❍ Between 1 and 3 years
- ❍ More than 3 years

These questions ask about your general World of Warcraft playing. Please indicate how much you agree or disagree with the following statements.

QWA1 I play World of Warcraft because I enjoy competing with other players.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Sometimes
- ❍ Agree
- ❍ Strongly Agree

QWA2 I sometimes purposefully try to provoke or irritate other players.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Sometimes
- ❍ Agree
- ❍ Strongly Agree

QWA3 I strive to make my character as powerful as possible.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Sometimes
- ❍ Agree
- ❍ Strongly Agree

QWA4 It is important for me to be well-known in the game.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Sometimes
- ❍ Agree
- ❍ Strongly Agree

QWA5 I will do boring or very repetitive tasks (such as grinding) if it makes my character more powerful in the end.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Sometimes
- ❍ Agree
- ❍ Strongly Agree

QWA6 Completing Achievements is important to me.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWE1 Playing helps me avoid thinking about some of my real life problems or worries.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWE2 I play World of Warcraft to relax.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWE3 Playing allows me to escape the real world for a while.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWTEST1 I enjoy reading about World of Warcraft, configuring my character, or thinking about possible game-situations and strategies.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWTEST2 I enjoy thinking about or planning my next session.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWPT1 I play to be entertained.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWPT2 I play to have something to do when bored.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWTEST3 I sometimes stay logged in on my character even when I'm not doing anything progressive in the game.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWTEST4 I sometimes stay on my character without doing anything else than jumping around or running in circles.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWPT4 I sometimes keep playing even if I'm not really enjoying myself.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWTEST5 I sometimes do tasks that don't make my character any more powerful at all, such as helping others for no gain or acquiring funny pets or clothes.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWS1 The people I play with online give me a sense of community.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QWS2 I feel lonely when I can't log on to World of Warcraft.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QWS3 I play to have something to do with others.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QWS4 I enjoy chatting with other players.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QWU1 I play World of Warcraft to get to know people with whom I have something in common.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QWU2 I play World of Warcraft to stay in touch with friends.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QWU3 I often look at other players characters and examine their gear.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QWU5 While playing, I usually communicate with other players through the in-game text chat.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QWU6 While playing, I usually communicate with other players through in-game voice-chat or programs like skype/teamspeak/ventrilo.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QWU8 I feel like time goes by quickly when I'm on World of Warcraft.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

These questions ask about positive and negative things with your World of Warcraft playing, and some questions about internet use in general.Please indicate how much you agree or disagree with the following statements.

QOLW1 I sometimes lose sleep because of the time I spend playing World of Warcraft.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLW2 I sometimes skip meals or delay my eating because I am busy playing World of Warcraft.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLW3 I have had conflicts with my partner or parents over the time I spend on World of Warcraft.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLW4 I have lost contact with some friends because I rather spend time on World of Warcraft.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLW5 My school/job performance has suffered because of the time I spend on World of Warcraft.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOSW1 I tend to spend more time online when I have other boring tasks I need to take care of.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOSW3 I spend more time on World or Warcraft when I feel down.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOSW4 I spend roughly the same amount of time on World of Warcraft every day.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeW1 Playing World of Warcraft has increased my language skills.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeW2 Playing World of Warcraft has increased my social skills.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGW1 My experience on the internet and/or in videogames has made me more understanding of those different from myself.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGW2 I have learned something new about another culture from surfing the internet, playing online games, participating in online communities or forums, etc.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGW3 I think the internet offers an important opportunity to get to know people from different backgrounds and different places.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

QOLeGW4 I think that using the internet and/or playing videogames makes people more open to other cultures.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

QWTEST6 If I feel better or worse after playing depends mostly on how well I've done in the game.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

WoWIntro 2 These questions ask about how you feel after playing World of Warcraft.Please indicate how often the following is true for you.

QOMW1 How often do you feel a sense of relaxation after playing World of Warcraft?
○ Never
○ Rarely
○ Sometimes
○ Quite Often
○ Very Often

QOMW2 How often do you feel happier after playing World of Warcraft?
○ Never
○ Rarely
○ Sometimes
○ Quite Often
○ Very Often

QOMW3 How often do you get a rush or a sense of excitement out of playing World of Warcraft?
○ Never
○ Rarely
○ Sometimes
○ Quite Often
○ Very Often

QOMW4 How often do you feel better about yourself and your life situation after playing World of Warcraft?
○ Never
○ Rarely
○ Sometimes
○ Quite Often
○ Very Often

These questions ask about your thoughts and feelings about playing, and not playing, World of Warcraft.Please indicate whether the following is true or false for you.

QOYW1 Do you feel preoccupied with World of Warcraft? (think about previous online activity or anticipate next online session?)
❍ Yes
❍ No

QOWY2 Do you feel the need to play World of Warcraft with increasing amounts of time in order to achieve satisfaction?
❍ Yes
❍ No

QOWY3 Have you repeatedly made unsuccessful efforts to control, cut back, or stop playing World of Warcraft?
❍ Yes
❍ No

QOWY4 Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop playing World of Warcraft?
❍ Yes
❍ No

QOWY5 Do you stay on World of Warcraft longer than originally intended?
❍ Yes
❍ No

QOWY6 Have you jeopardized or risked the loss of a significant relationship, job, educational career opportunity because of World of Warcraft?
❍ Yes
❍ No

QOWY7 Have you lied to family members, therapist, or others to conceal the extent of involvement with World of Warcraft?
❍ Yes
❍ No

QOWY8 Do you use World of Warcraft as a way of escaping from problems or of relieving a dysphoric mood (e.g. feelings of helplessness, guilt, anxiety, depression?)
❍ Yes
❍ No

QP1 On average, how many hours a day do you spend on online poker?
❍ Less than 1 hour
❍ Between 1 to 3 hours
❍ Between 3 to 5 hours
❍ More than 5 hours

QPG3 For how long, approximately, have you been playing online poker?
❍ Less than 6 months
❍ Between 6 months and 1 year
❍ Between 1 and 3 years
❍ More than 3 years

These questions ask about your general online poker playing. Please indicate how much you agree or disagree with the following statements.

QPA1 I play online poker because I enjoy competing with other players.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Q321 It is important for me to achieve good rankings on the site I play on.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPA2 I sometimes purposefully try to provoke or irritate other players.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPA3 It is important for me to improve my poker skills.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPA4 It is important for me to be well-known amongst other players.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPA5 I will do boring or very repetitive tasks if it makes me a better player in the end, for example playing many low-value hands to practice.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPE1 Playing online poker helps me avoid thinking about some of my real life problems or worries.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPE2 I play online poker to relax.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPE3 Playing online poker allows me to escape the real world for a while.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPPT1 I play online poker to be entertained.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPTEST1 I play online poker as a source of income.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPPT2 I play online poker to have something to do when bored.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPPT3 I sometimes stay logged in on the poker site even though I'm not really playing.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPPT4 I sometimes keep playing even though I'm not really enjoying myself.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPS1 The people I play poker with online give me a sense of community.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPS2 I feel lonely when I can't play online poker.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPS3 I play online poker to have something to do with others.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPS4 I enjoy chatting with other players.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPU1 I play online poker to get to know people with whom I have something in common.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPU2 I play online poker to stay in touch with friends.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPU3 I often look at other players scores and ratings.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPU5 While playing, I usually communicate with other players through the in-game chat.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPU6 While playing, I usually communicate with other players through voice-chat
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

QPU8 I feel like time goes by quickly when I'm playing poker.
- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

These questions ask about positive and negative consequences of your online poker playing, and some questions about internet use in general.Please indicate how much you agree or disagree with the following statements.

QOLP1 I sometimes lose sleep because of the time I spend playing online poker.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

QOLP2 I sometimes skip meals or delay my eating because I am busy playing online poker.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

QOLP3 I have had conflicts with my partner or parents over the time I spend on online poker.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

QOLP4 I have lost contact with some friends because I rather spend time on online poker.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

QOLP5 My school/job performance has suffered because of the time I spend on online poker.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

QOSP1 I tend to spend more time online when I have other boring tasks I need to take care of.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

QOSP3 I spend more time on online poker when I feel down.
○ Strongly Disagree
○ Disagree
○ Neither Agree nor Disagree
○ Agree
○ Strongly Agree

QOSP4 I spend roughly the same amount of time on online poker every day.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeP1 Playing online poker has increased my language skills.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeP2 Playing online poker has increased my social skills.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

Q325 Playing online poker has increased my ability to calculate and work with numbers.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGP1 My experience on the internet and/or in videogames has made me more understanding of those different from myself.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGP2 I have learned something new about another culture from surfing the internet, playing online games, participating in online communities or forums, etc.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGP3 I think the internet offers a very important opportunity to get to know people from different backgrounds and different places.
- ❍ Strongly Disagree
- ❍ Disagree
- ❍ Neither Agree nor Disagree
- ❍ Agree
- ❍ Strongly Agree

QOLeGP4 I think that using the internet and/or playing videogames makes people more open to other cultures.
❍ Strongly Disagree
❍ Disagree
❍ Neither Agree nor Disagree
❍ Agree
❍ Strongly Agree

QPTEST2 If I feel better or worse after playing depends mostly on how well I've done in the game.
❍ Strongly Disagree
❍ Disagree
❍ Neither Agree nor Disagree
❍ Agree
❍ Strongly Agree

These questions ask about your thoughts and feelings about playing, and not playing, online poker. Please indicate whether the following is true or false for you.

QOYP1 Do you feel preoccupied with online poker? (think about previous online activity or anticipate next online session?)
❍ Yes
❍ No

QOYP2 Do you feel the need to play online poker with increasing amounts of time in order to achieve satisfaction?
❍ Yes
❍ No

QOYP3 Have you repeatedly made unsuccessful efforts to control, cut back, or stop playing online poker?
❍ Yes
❍ No

QOYP4 Do you feel restless, moody, depressed, or irritable when attempting to cut down or stop playing online poker?
❍ Yes
❍ No

QOYP5 Do you stay on the poker site longer than originally intended?
❍ Yes
❍ No

QOYP6 Have you jeopardized or risked the loss of a significant relationship, job, educational career opportunity because of online poker?
❍ Yes
❍ No

QOYP7 Have you lied to family members, therapist, or others to conceal the extent of involvement with online poker?
❍ Yes
❍ No

QOYP8 Do you use online poker as a way of escaping from problems or of relieving a dysphoric mood (e.g. feelings of helplessness, guilt, anxiety, depression?)
❍ Yes
❍ No

PIntro2 These questions ask about how you feel after playing online poker.Please indicate how often the following is true for you.

QOMP1 How often do you feel a sense of relaxation after playing online poker?
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QOMP2 How often do you feel happier after playing online poker?
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QOMP3 How often do you get a rush or a sense of excitement out of playing online poker?
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

QOMP4 How often do you feel better about yourself and your life situation after playing online poker?
- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Quite Often
- ○ Very Often

These questions ask about you and who you are in general.(page 5/7) Please indicate how much you agree or disagree with the following statements.

QSA1 I find myself worrying that I won't know what to say in social situations.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSA2 When mixing socially, I am uncomfortable.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSA3 I am nervous mixing with people I don't know very well.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSA4 I am tense mixing in a group.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSWL1 In most ways my life is close to ideal.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSWL2 The conditions of my life are excellent.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSWL3 I am satisfied with my life.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSWL4 So far I have gotten the important things I want in life.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSWL5 If I could live my life over, I would change almost nothing.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSE1 I feel that I'm a person of worth, at least on an equal plane with others.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSE2 I feel that I have a number of good qualities.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSE3 I am able to do things as well as most other people.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSE4 I feel I do not have much to be proud of.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSE5 I take a positive attitude toward myself.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

QSE6 At times I think I am no good at all.
- ○ Strongly disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly agree

These questions ask about you and who you are in general. Please indicate how often the following is true for you.

QSTR1 In the last month, how often have you felt that you were unable to control the important things in your life?
- ○ Never
- ○ Almost never
- ○ Sometimes
- ○ Fairly often
- ○ Very often

QSTR2 In the last month, how often have you felt confident about your ability to handle your personal problems?
- ○ Never
- ○ Almost never
- ○ Sometimes
- ○ Fairly often
- ○ Very often

QSTR3 In the last month, how often have you felt that things were going your way?
- ○ Never
- ○ Almost never
- ○ Sometimes
- ○ Fairly often
- ○ Very often

QSTR4 In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

- ○ Never
- ○ Almost never
- ○ Sometimes
- ○ Fairly often
- ○ Very often

QLON1 How often do you feel that there are people you can turn to?

- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Fairly often
- ○ Always

QLON2 How often do you feel that there are people you can talk to?

- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Fairly often
- ○ Always

QLON3 How often do you feel that there are people who really understand you?

- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Fairly often
- ○ Always

QLON4 How often do you feel left out?

- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Fairly often
- ○ Always

QLON5 How often do you feel part of a group of friends?

- ○ Never
- ○ Rarely
- ○ Sometimes
- ○ Fairly often
- ○ Always

Appendix III - Correlations in Survey

1 = Social anxiety

2 = Satisfaction with life

3 = Self-esteem

4 = Stress

5 = Loneliness

6 = Escapism motivations

7 = Social motivations

8 = Problematic outcomes

9 = Achievement motivations

10 = Entertainment

World of Warcraft	1	2	3	4	5	6	7	8	9
1	1	-.255**	-.364**	.431**	.548**	.294**	.033	.218**	.136**
2	-.255**	1	.638**	-.398**	-.408**	-.227**	-.007	-.225**	-.003
3	-.364**	.638**	1	-.452**	-.421**	-.340**	-.087*	-.311**	-.066
4	.431**	-.398**	-.452**	1	.551**	.378**	.083*	.302**	.222**
5	.548**	-.408**	-.421**	.551**	1	.273**	-.013	.244**	.155**
6	.294**	-.227**	-.430**	.378**	.273**	1	.562**	.461**	.302**
7	.033	-.007	-.087*	.083*	-.013	.562**	1	.157**	.379**
8	.218**	-.225**	.311**	.302**	.224**	.461**	.157**	1	.459**
9	.136**	-.003	-.066	.222**	.155**	.302**	.379**	.459**	1

Facebook	1	2	3	4	5	6	7	8
1	1	-.338**	-.455**	.321**	.513**	.137**	-.159**	-.049
2	-.338**	1	.649**	-.597**	-.550**	-.117*	.061*	-.076
3	-.455**	.649**	1	-.598**	-.600**	-.162**	.137*	-.125*
4	.321**	-.597**	-.598**	1	.472**	.203**	-.065	.222**
5	.513**	-.550**	-.600**	.472**	1	.099	-.210**	.054
6	.137**	-.117*	-.162**	.203**	.099	1	.239**	.533**
7	-.159**	.061	.137*	-.065	-.210**	.239**	1	.263**
8	-.049	-.076	-.125*	.222*	.054	.533**	.263**	1

Online poker	1	2	3	4	5	6	9	7	8	10
1	1	-.296**	-.403**	.256**	.434**	.264**	.017	.219**	.065	.019
2	-.296**	1	.630**	-.638**	-.518**	-.374**	-.047	-.224**	.051	.018
3	-.403**	.630**	1	-.600**	-.498**	-.354**	-.014	-.245**	.103*	.014
4	.256**	-.638**	-.600**	1	.479**	.436**	.120**	.239**	-.048	.039
5	.434**	-.517**	-.498**	.479**	1	.294**	.039	.262**	-.080	-.098*
6	.264**	-.374**	-.354**	.436**	.294**	1	.274**	.490**	-.031	.263**
7	.014	-.247**	-.014	.120**	.039	.274**	1	.144**	.136**	.226**
8	.219**	-.224**	-.245**	.239**	.262**	.490**	.144**	1	.150**	-.137**
9	.065	.051	.103*	-.048	-.080	-.031	.136**	.150**	1	-.088*
10	.019	.018	.014	.039	-.098*	.263**	.226**	-.137**	-.088*	1

Appendix IV – Hierarchical factor analyses on psychological variables for all platforms

Hierarchical factor analysis on psychological items for the World of Warcraft sample

Items	Social anxiety	Sat. w life	Self esteem	Stress	Loneliness
QSA1: I find myself worrying that I won't know what to say in social situations.	.717				
QSA2: When mixing socially, I am uncomfortable.	.821				
QSA3: I am nervous mixing with people I don't know very well.	.822				
QSA4: I am tense mixing in a group.	.824				
QSWL1: In most ways my life is close to ideal.		.770			
QSWL2: The conditions of my life are excellent.		.699			
QSWL3: I am satisfied with my life.		.695			
QSWL4: So far I have gotten the important things I want in life.		.609			
QSWL5: If I could live my life over, I would change almost nothing.		.505			
QSE1: I feel that I'm a person of worth, at least on an equal plane with others.			.682		
QSE2: I feel that I have a number of good qualities.			.760		
QSE3: I am able to do things as well as most other people.			.517		
QSE4: I feel I do not have much to be proud of.*			-.502		
QSE5: I take a positive attitude toward myself.			.545		
QSE6: At times I think I am no good at all.*			-.439	(.307)	
QSTR1: In the last month, how often have you felt that you were unable to control the important things in your life?				.649	
QSTR2: In the last month, how often have you felt confident about your ability to handle your personal problems?*			(.373)	-.387	(.301)
QSTR3: In the last month, how often have you felt that things were going your way?*		(.479)		-.335	
QSTR4: In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?				.676	
QLON1: How often do you feel that there are people you can turn to?					.823
QLON2: How often do you feel that there are people you can talk to?					.787
QLON3: How often do you feel that there are people who really understand you?					.610
QLON4: How often do you feel left out?*	(.395)				-.307
QLON5: How often do you feel part of a group of friends?	(-.307)				.484
Cronbach's Alpha	.905	.840	.840	.750	.849

Base: All participants who play World of Warcraft, N=702.
Note I: Only primary factor loadings >0.30 are indicated in the table.
Note II: Cross-loadings >.25 are indicated in parenthesis.

Hierarchical factor analysis on psychological items for the Facebook sample

Items	Social anxiety	Sat. w life	Self esteem	Stress	Loneliness
QSA1: I find myself worrying that I won't know what to say in social situations.	.762				
QSA2: When mixing socially, I am uncomfortable.	.789				
QSA3: I am nervous mixing with people I don't know very well.	.819				
QSA4: I am tense mixing in a group.	.788				
QSWL1: In most ways my life is close to ideal.		.725			
QSWL2: The conditions of my life are excellent.		.615			
QSWL3: I am satisfied with my life.		.721			
QSWL4: So far I have gotten the important things I want in life.		.697			
QSWL5: If I could live my life over, I would change almost nothing.		.612			
QSE1: I feel that I'm a person of worth, at least on an equal plane with others.			.551		
QSE2: I feel that I have a number of good qualities.			.794		
QSE3: I am able to do things as well as most other people.			.491		
QSE4: I feel I do not have much to be proud of.*			-.488		
QSE5: I take a positive attitude toward myself.	(.402)		.463		
QSE6: At times I think I am no good at all.*			-.336	(.424)	
QSTR1: In the last month, how often have you felt that you were unable to control the important things in your life?				.699	
QSTR2: In the last month, how often have you felt confident about your ability to handle your personal problems?*			(.361)	-.408	(.301)
QSTR3: In the last month, how often have you felt that things were going your way?*		(.479)		-.363	
QSTR4: In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?				.689	
QLON1: How often do you feel that there are people you can turn to?					.821
QLON2: How often do you feel that there are people you can talk to?					.756
QLON3: How often do you feel that there are people who really understand you?					.628
QLON4: How often do you feel left out?*	(.406)			(.330)	-.284*
QLON5: How often do you feel part of a group of friends?	(.322)				.487
Cronbach's Alpha	.896	.869	.806	.758	.848

Base: All participants who use Facebook, N=348.
Note I: Only primary factor loadings >0.30 are indicated in the table.
Note II: Cross-loadings >.25 are indicated in parenthesis.

Hierarchical factor analysis on psychological items for the online poker sample

Items	Social anxiety	Sat. w life	Self esteem	Stress	Loneliness
QSA1: I find myself worrying that I won't know what to say in social situations.	.773				
QSA2: When mixing socially, I am uncomfortable.	.846				
QSA3: I am nervous mixing with people I don't know very well.	.818				
QSA4: I am tense mixing in a group.	.848				
QSWL1: In most ways my life is close to ideal.		.756			
QSWL2: The conditions of my life are excellent.		.716			
QSWL3: I am satisfied with my life.		.699			
QSWL4: So far I have gotten the important things I want in life.		.651			
QSWL5: If I could live my life over, I would change almost nothing.		.518			
QSE1: I feel that I'm a person of worth, at least on an equal plane with others.			.722		
QSE2: I feel that I have a number of good qualities.			.599		
QSE3: I am able to do things as well as most other people.			.497		
QSE4: I feel I do not have much to be proud of.*			-.448		
QSE5: I take a positive attitude toward myself.			.543		
QSE6: At times I think I am no good at all.*			-.466	(.277)	
QSTR1: In the last month, how often have you felt that you were unable to control the important things in your life?				.609	
QSTR2: In the last month, how often have you felt confident about your ability to handle your personal problems?*		(.348)	(.335)	-.462	
QSTR3: In the last month, how often have you felt that things were going your way?*		(.419)		-.451	
QSTR4: In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?				.677	
QLON1: How often do you feel that there are people you can turn to?					.831
QLON2: How often do you feel that there are people you can talk to?					.861
QLON3: How often do you feel that there are people who really understand you?					.577
QLON4: How often do you feel left out?*	(.374)				-.360
QLON5: How often do you feel part of a group of friends?	(-.324)				.487
Cronbach's Alpha	.913	.871	.796	.789	.843

Base: All participants who play online poker, N=513.
Note I: Only primary factor loadings >0.30 are indicated in the table.
Note II: Cross-loadings >.25 are indicated in parenthesis.

Appendix V – Hierarchical factor analyses for problematic outcome items on all platforms

Hierarchical factor analysis on problematic outcomes items for the World of Warcraft sample

Items	Negotiation	Mood alteration	Problematic outcomes
QOLeGW4: I think that using the internet and/or playing videogames makes people more open to other cultures.	.763		
QOLeGW1: My experience on the internet and/or in videogames has made me more understanding of those different from myself.	.706		
QOLeGW2: I have learned something new about another culture from surfing the internet, playing online games, participating in online communities or forums, etc.	.700		
QOLeGW3: I think the internet offers an important opportunity to get to know people from different backgrounds and different places.	.668		
QOLeW2: Playing World of Warcraft has increased my social skills.	.481		
QOLeW1: Playing World of Warcraft has increased my language skills.	.467		
QOMW2: How often do you feel happier after playing World of Warcraft?		.813	
QOMW4: How often do you feel better about yourself and your life situation after playing World of Warcraft?		.651	
QOMW3: How often do you get a rush or a sense of excitement out of playing World of Warcraft?		.575	
QOMW1: How often do you feel a sense of relaxation after playing World of Warcraft?		.499	
QOLW5: My school/job performance has suffered because of the time I spend on World of Warcraft.			.646
QOLW1: I sometimes lose sleep because of the time I spend playing World of Warcraft.			.610
QOLW2: I sometimes skip meals or delay my eating because I am busy playing World of Warcraft.			.556
QOLW4: I have lost contact with some friends because I rather spend time on World of Warcraft.			.551
QOLW3: I have had conflicts with my partner or parents over the time I spend on World of Warcraft.			.533
Cronbach's Alpha	.796	.734	.717
Mean (SD)	3.81 (0.69)	3.24 (0.64)	2.62 (0.85)

Base: All participants who play World of Warcraft, N=702.
Note I: Only primary factor loadings >0.30 are indicated in the table.

Hierarchical factor analysis on problematic outcomes items for the Facebook sample

Items	Learning	Problematic outcomes	Mood alteration
QOLeGF4: I think that using the internet and/or playing videogames makes people more open to other cultures.	.806		
QOLeGF1: My experience on the internet and/or in videogames has made me more understanding of those different from myself.	.802		
QOLeGF2: I have learned something new about another culture from surfing the internet, playing online games, participating in online communities or forums, etc.	.705		
QOLeGF3: I think the internet offers an important opportunity to get to know people from different backgrounds and different places.	.642		
QOLeF2: Using Facebook has increased my social skills.	.329		
QOLeF1: Using Facebook has increased my language skills.	.307		
QOLP1: I sometimes lose sleep because of the time I spend using Facebook.		.689	
QOLP5: My school/job performance has suffered because of the time I spend on Facebook.		.635	
QOLP3: I have had conflicts with my partner or parents over the time I spend on Facebook.		.597	
QOLP2: I sometimes skip meals or delay my eating because I am busy using Facebook.		.588	
QOLP4: I have lost contact with some friends because I rather spend time on Facebook.		.530	
QOMF2: How often do you feel happier after playing using Facebook?			.813
QOMF1: How often do you feel a sense of relaxation after using Facebook?			.698
QOMF4: How often do you feel better about yourself and your life situation after using Facebook?			.693
QOMF3: How often do you get a rush or a sense of excitement out of using Facebook?			.502
Cronbach's Alpha	.772	.748	.784
Mean (SD)	3.28 (0.67)	1.48 (0.53)	2.20 (0.53)

Base: All participants who use Facebook, N=348.
Note I: Only primary factor loadings >0.30 are indicated in the table.

Hierarchical factor analysis on problematic outcomes items for the online poker sample

Items	Learning	Mood alteration	Losses
QOLeGP4: I think that using the internet and/or playing videogames makes people more open to other cultures.	.754		
QOLeGP1: My experience on the internet and/or in videogames has made me more understanding of those different from myself.	.694		
QOLeGP3: I think the internet offers an important opportunity to get to know people from different backgrounds and different places.	.680		
QOLeGP2: I have learned something new about another culture from surfing the internet, playing online games, participating in online communities or forums, etc.	.677		
QOLeP1: Playing Online poker has increased my language skills.	.395		
QOLeP2: Playing Online poker has increased my social skills.	.364		
QOMP2: How often do you feel happier after playing Online poker?		.896	
QOMP4: How often do you feel better about yourself and your life situation after playing Online poker?		.615	
QOMP1: How often do you feel a sense of relaxation after playing Online poker?		.480	
QOMP3: How often do you get a rush or a sense of excitement out of playing Online poker?		.464	
QOLP1: I sometimes lose sleep because of the time I spend playing Online poker.			.553
QOLP2: I sometimes skip meals or delay my eating because I am busy playing Online poker.			.543
QOLP3: I have had conflicts with my partner or parents over the time I spend on Online poker.			.485
QOLP4: I have lost contact with some friends because I rather spend time on Online poker.			.605
QOLP5: My school/job performance has suffered because of the time I spend on Online poker.			.573
Cronbach's Alpha	.764	.688	.685
Mean (SD)	3.18 (0.72)	3.14 (0.63)	2.57 (0.83)

Base: All participants who play online poker, N=513.
Note I: Only primary factor loadings >0.30 are indicated in the table.