EXCESSIVE INTERNET USE AND PSYCHOPATHOLOGY: THE ROLE OF COPING

Daria J. Kuss, Thomas J. Dunn, Klaus Wölfling, Kai W. Müller, Mateusz Hędzelek, Jerzy Marcinkowski

Abstract

Objective: In 2013, the American Psychiatric Association included Internet Gaming Disorder in the diagnostic manual as a condition which requires further research, indicating the scientific and clinical community are aware of potential health concerns as a consequence of excessive Internet use. From a clinical point of view, it appears that excessive/addictive Internet use is often comorbid with further psychopathologies and assessing comorbidity is relevant in clinical practice, treatment outcome and prevention as the probability to become addicted to using the Internet accelerates with additional (sub)clinical symptoms. Moreover, research indicates individuals play computer games excessively to cope with everyday stressors and to regulate their emotions by applying media-focused coping strategies, suggesting pathological computer game players play in order to relieve stress and to avoid daily hassles. The aims of this research were to replicate and extend previous findings and explanations of the complexities of the relationships between excessive Internet use and Internet addiction, psychopathology and dysfunctional coping strategies.

Method: Participants included 681 Polish university students sampled using an online battery of validated psychometric instruments.

Results: Results of structural equation models revealed dysfunctional coping strategies (i.e., distraction, denial, self-blame, substance use, venting, media use, and behavioural disengagement) significantly predict excessive Internet use, and the data fit the theoretical model well. A second SEM showed media-focused coping and substance use coping significantly mediate the relationship between psychopathology (operationalised via the Global Severity Index) and excessive Internet use.

Conclusions: The findings lend support to the self-medication hypothesis of addictive disorders, and suggest psychopathology and dysfunctional coping have additive effects on excessive Internet use.

Key words: excessive Internet use, Internet addiction, psychopathology, coping, global severity index

Declaration of interest: none

Daria J. Kuss, PhD[1], Thomas J. Dunn, PhD[2], Klaus Wölfling, PhD[3], Kai W. Müller, PhD[3], Mateusz Hędzelek, MA[4], Jerzy Marcinkowski, Prof. Dr. hab.[4]

[1] Nottingham Trent University, Nottingham NG1 4BU, UK

[2] Bishops Grotesste University, Longdales Rd, Lincoln LN1 3DYUK

[3] Outpatient Clinic for Gaming Addictions, Mainz, Germany

[4] Poznań Medical University, Collegium Maius, Fredry 10, 61-701 Poznań, Poznań, PL

Corresponding author

Daria J. Kuss, PhD

Nottingham Trent University, Nottingham NG1 4BU, UK

E-mail: daria.kuss@ntu.ac.uk

Introduction

In 2013, the American Psychiatric Association included Internet Gaming Disorder (IGD) in the most recent fifth edition of the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-5) as a condition that requires further scientific research in order to be included in the main manual. Since then, researchers have repeatedly questioned the validity of a potential diagnosis (e.g., Kuss et al. 2016) and proposed using more general denominations for this condition as the diagnostic and research landscape in this field continues to suffer from ambiguities concerning conceptualization, measurement and treatment (Kuss and Lopez-Fernandez 2016). Consequently, in this paper, excessive Internet use will demarcate any type of online behaviour (including online gaming) that may lead to consequences traditionally associated with substance-related addictions, including symptoms such as mood modification, salience, tolerance, withdrawal, relapse, and conflict (Griffiths 2005, Kuss et al. 2014).

From a clinical point of view, it appears that excessive/addictive Internet use is often comorbid with further psychopathologies and other mental and behavioural problems. Analyzing the comorbidity between addictive symptoms and symptoms of other mental disorders is relevant for several reasons. Firstly, most of the time, a clinical symptom does not come alone. Secondly, if comorbid symptoms and disorders are not addressed in clinical practice, the positive outcome for the patient is diminished. Thirdly, being aware of comorbidity will inform prevention (Hall et al. 2009). Studies in children, adolescents and adults in Taiwan, Korea and the United States found that further clinical symptoms are associated with Internet addiction, namely mood and anxiety disorders in

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general (Shapira et al. 2000), ADHD, depression (Ha et al 2006, Quinn and Forsyth 2005, Yen et al. 2007), social phobia/anxiety (Lo et al. 2005, Yen et al. 2007), schizophrenia and OCD (Ha et al. 2006). Furthermore, research in the Netherlands and Korea indicates that Internet addiction correlates with subclinical symptoms, such as loneliness (van den Eijnden et al. 2008b), harm avoidance (Lee et al. 2008), aggression, self-control and narcissism (Kim et al. 2008). Thus, it seems that the probability to become addicted to using the Internet accelerates with additional (sub)clinical symptoms.

In recent studies conducted on samples of Austrian and German teenagers and patients treated for their excessive computer game use at specialized treatment centres, it was found that individuals play computer games excessively to cope with everyday stressors and to regulate their emotions by applying media-focused coping strategies (Black et al. 1999, Bohnert and Ross 2010, Wölfling et al. 2008). This finding is supported by a study including a sample of primarily Dutch Massively Multiplayer Online Role-Playing Game players, whose excessive gaming behaviour was predicted by escapism as a motivational strategy (Kuss et al. 2009). This suggests that pathological computer game players play in order to relieve stress and to avoid daily hassles, and recent research has suggested that Internet use may fulfill a compensatory function in supporting individuals in coping with psychosocial problems (Kardefelt-Winther 2014a). As a consequence, the ability to cope with stress may deteriorate or not even develop in the first place, particularly in the case of adolescents who may not even learn how to approach life stress actively. School-aged children with pathological computer game play patterns tend to use dysfunctional coping strategies, such as media-focused coping, more often than non-pathological gamers, and the opposite holds true for functional coping strategies (Jang et al. 2008). This may result in negative long-term consequences with respect to the application of passive media-focused coping in subsequent situations which involve emotional stress. This, in turn, may lead to a propensity for the development of pathological psychological and somatic disorders, such as depression, anxiety and somatization (van den Eijnden et al. 2008a). From a cognitive behavioural view, underlying psychopathological symptomatology may be exacerbated by dysfunctional coping (Zimmer-Gembeck and Skinner 2016). From a transactional perspective, coping has an impact on how an individual deals with stress, i.e., situations that are perceived as going beyond a person's available resources (Lazarus and Folkman 1986). The individual appraisal of the stressful event (i.e., as threat, loss or challenge) results in particular coping strategies, "cognitive and behavioural efforts to master, tolerate, or reduce external and internal demands and conflicts among them" (Folkman and Lazarus 1980, p. 223), which in turn may end or extend the levels of stress experienced. Previous research (Kardefelt-Winther 2014b) has criticized Internet addiction research and has called for new explanations, including the role of factors that mediate the relationship between Internet addiction and psychosocial wellbeing, and has particularly drawn attention to compensatory mechanisms that may draw individuals to seek Internet use in order to cope with psychosocial problems. Accordingly, it may be hypothesized that dysfunctional coping mediates the relationships between psychopathological symptomatology and excessive Internet use and Internet addiction. Previous research (Brand et al. 2014) indicated that dysfunctional coping (i.e., denial, substance use and behavioural disengagement) statistically mediated the effect of psychopathological aspects of generalised Internet addiction in a sample of German Internet users. This finding is novel and requires extension and replication in other cultures, which is a gap the present paper aims to fill.

Reported prevalence rates of Internet addiction differ across studies and cultural backgrounds. In Poland, approximately 6% of adolescents have been found to be addicted to the Internet (Zboralski et al 2009), a figure that does not correspond with prevalence estimates in other countries, as 3.2% of UK university students (Kuss et al. 2013) and 3.7% of Dutch adolescents (Kuss et al 2013) were identified to meet criteria for Internet addiction (Meerkerk et al. 2009, Wölfling et al. 2010). Additional research (Zboralski et al. 2009) suggests approximately one-fifth of Polish youth is in danger of developing addiction symptoms, compared to approximately one-tenth in South Korea and Norway (Johansson and Gotestam 2004, Park et al. 2008). Specifically, individualistic cultures tend to adopt the Internet readily because it is seen as an "impersonal" medium which mirrors their distanced, detailed, direct and information dense, "low context", communication style (Geertz 1973, Hoeft et al. 2008). The opposite holds true for collectivist cultures, which use "high context" communication, characterized by an informal, indirect and symbolic style. Given Polish culture is considered collectivist (Henn et al. 2009, Shaffer et al. 2004), and Internet usage and Internet addiction prevalence differ across countries, it appears important to investigate the proposed model in a Polish cultural context, which this paper intends to do.

It is significant to investigate Internet addiction symptomatology in university students because they are a population at risk or a "vulnerable group" (Kuss et al. 2013) to develop problems as a consequence of their Internet use for several reasons, i.e., free and unlimited access, flexible schedules, freedom from parental interference, no external control of online activities, expectation from university bodies to make use of the technology, and social intimidation and alienation in university settings (Corr 2004, Young 2004). Moreover, psychological and developmental factors associated with young adulthood contribute to the allure of the Internet for students as they are developing their identities whilst detaching from their parents, which may lead to internal conflicts resolved by escaping into different types of addictions. Accordingly, the Internet may become a source of self-medication (Kuss et al. 2013). Moreover, based on their daily clinical experience of working with individuals diagnosed with Internet addiction, psychotherapists across six different countries (i.e., the UK, Germany, Switzerland, Austria, the USA and Canada) have identified the transition to university student life as a particular risk factor for developing problematic Internet use habits (Kuss and Griffiths 2015). In light of this, students appear to be a particular risk group for developing Internet addiction**.**

The aims of this research were to replicate and extend previous findings (Brand et al. 2014) and explanations of the complexities of the relationships between excessive Internet use and Internet addiction and psychopathology by (i) including any significant dysfunctional coping strategies as presented in the Brief COPE (Carver 1997) rather than a select number (Brand et al. 2014) in a mediation model, (ii) employing a different sample (i.e., a Polish university student population), and (iii) by including a more global measure of psychopathology (that allows us to capture a much wider range of psychopathology).

Materials and methods

2.1 Participants

Participants included 681 Polish university students studying Social Sciences (60.5%) and Natural Sciences (mean age = 21.0 years, SD = 1.5 years; age range 18-30 years; 74.2% male).

Procedure

A web-based questionnaire was devised including measures for Internet addiction, coping strategies, and psychopathology. The invitation to participate in the study containing the hyperlink was sent directly to the students' university email accounts and it was advertised in various student online forums. Participation was incentivized with a lottery of shopping vouchers.

Materials

Internet addiction

To assess Internet addiction, the 16-item Assessment for Computer and Internet Addiction-Screener [AICA-S] (Wölfling et al. 2010, Müller et al. 2014) was used, which derives Internet addiction criteria from the diagnostic criteria of substance dependence (American Psychiatric Association 2000, World Health Organization 1992). These include mood modification, tolerance, withdrawal, loss of control, salience and negative consequences concerning poorer health, family conflicts or deteriorating achievements. The screener used a 5-point Likert scale, and responses were scored only if individuals responded strongly/very strongly to fourteen of the total sixteen questions to categorize use as normal or addictive (from 13.5 points onwards) (Wölfling et al. 2010). The questionnaire was translated and back translated (Harkness and Schoua-Glusberg 1998) by two native speakers to ensure the applicability of the AICA-S for the Polish sample. The AICA-S is psychometrically reliable in its measure of Internet addiction and has been found to be valid regarding assessing Internet addiction symptoms in German and English samples (Kuss et al. 2013, Kuss et al. 2014a, Wölfling et al. 2010, Müller et al. 2014). Numerous authors have advocated the use of McDonald's Omega as opposed to Cronbach's Alpha as a measure of scale reliability (internal consistency) (Dunn et al. 2014, Kelley and Cheng 2012). Using McDonald's Omega, results showed good internal consistency for the AICA-S in the present study (0.81 [CI 0.77 - 0.84]).

Coping

To enquire into the ways in which the participants cope with everyday problems and intricacies, the extended and translated version of the original Brief COPE (Carver 1997) was used. Two supplementary items assessing media-focussed coping were added in this version, namely item 15 ("I tried to forget the problem by means of watching TV, surfing the Internet or playing computer games") and item 30 ("I distracted myself by watching TV, surfing the Internet or playing computer games") (Müller and Wölfling 2011). The scale was translated into Polish language using a translation- and back translation method to ensure applicability in the Polish cultural context (Harkness and Schoua-Glusberg 1998). It is a self-report scale that measures fourteen distinct coping styles. The questionnaire's reliability and validity are certified across a number of distinct samples and multiple countries (e.g., Muller and Spitz 2003, Pasto et al. 2000, Williams et al. 2007), and in relation to its subscales (Cooper et al. 2008). Each subscale consists of two items and uses a Likert scale response format (1-4). The Brief COPE is based upon established theories of coping, namely Lazarus and Folkman's (1984) transactional model of stress as well as Carver and Scheier's (1981) behavioural self-regulation model. It includes three component subscales assessing emotion- and problem-focused as well as dysfunctional coping. Dysfunctional coping includes distraction (Omega = 0.38 [CI = 0.27 - 0.46]), denial (Omega = 0.59 [CI = 0.47 - 0.67]), self-blame (Omega = 0.77 [CI = 0.72 - 0.81]), substance use (e.g., "I drank alcohol or used medication in order to feel better quickly or to distract myself"; Omega = 0.71 [CI = 0.61 - 0.78]), venting (Omega = 0.36 [CI = 0.24 - 0.45]), and behavioural disengagement (Omega = 0.46 [CI = 0.37 - 0.56]) (Carver et al. 1989). An additional form of dysfunctional coping was measured and aimed to capture media-focussed coping. Media-focussed coping was included due to its established empirical and theoretical links with Internet addiction (Müller and Wölfling 2011), and measured in the same way as each dimension of The Brief COPE by the use of two items with Likert-scale response formats (1-4) (Omega = 0.81 [CI = 0.76 - 0.84]). Owing to the fact the scales consist of only two items, the internal consistency estimates (in the current study) reflect ranges previously reported (Carver 1997), and that the instrument has been used in multiple validation studies, we consider the psychometric properties to be acceptable.

Psychopathological symptomatology

For assessing psychopathological symptomatology, the short form of the original Symptom Checklist (Derogatis 1994), the SCL-27-plus (Hardt 2008), was used. It is an efficient and time-saving self-report scale inquiring into the following psychopathological symptomatology: depressive (present and life-time), vegetative, agoraphobic and sociophobic symptoms, as well as pain. The experience of psychopathological symptoms is scored on a Likert scale ranging from 0 (never) to 4 (very often). The SCL-27-plus measures overall psychological stress and psychopathological symptomatology by means of the Global Severity Index (GSI). The questionnaire's psychometric qualities are good and it can be used for healthy as well as pathological populations (Hardt 2008). Internal consistency for the GSI (i.e., all items) was estimated (using Omega) at 0.91 [CI: 0.90 - 0.92]. For the purposes of the present study, the SCL-27-plus appeared to be more adequate than the original scale due to the former's brevity, which would have a beneficial effect on response rate. The scale was translated into Polish language using a translation-and back translation method to ensure applicability in the Polish cultural context (Harkness and Schoua-Glusberg 1998).

Statistical analyses

Statistical analyses were conducted with R statistical software using the Lavaan package (Rosseel 2012). Structural equation modeling (SEM) was used to model the relationship between a number of latent variables. Model 1 examined the relationship between different types of dysfunctional coping and excessive Internet usage. Model 2 examined mediating relationships between psychopathology and excessive Internet use via dysfunctional coping strategies.

Results

Internet addiction prevalence

Out of the total sample of 683 students, 27 (4%) were classified as addicted to the Internet. The mean AICA-S score for the entire sample was 4.4 (*SD*=3.0), and 18.0 (*SD*=2.9) for the addicted students.

Dysfunctional coping and excessive Internet use (Model 1)

A structural model was specified with dysfunctional coping strategies (distraction, denial, self-blame, substance use, venting, media use, and behavioural disengagement) as predictors and excessive Internet use as dependent variable. The model yielded a good fit with the data. The RMSEA was .053 with $p < .001$, the CFI was .88, the TLI was .86, and the SRMR was .053. The χ^2 test was significant, $\chi^2 = 927.27$, $p < .001$, which is typical given the sample size (i.e., >400). However, the χ^2 test for the baseline model was also significant with an extensively higher χ^2 value, $\chi^2 = 5617.10$, $p < .001$. In summary, the data fit the proposed theoretical model well. Overall, 29.6% of the variance in excessive Internet use was explained by dysfunctional coping strategies. The model with standardised estimates is shown in **figure 1**. Results showed media-focussed coping and substance use to be the only two significant predictors of excessive Internet use (see **table 1**).

Psychopathology and excessive Internet use mediated by media-focussed coping and substance coping (Model 2)

The structural model with psychopathology (measured via GSI) as the direct effect and media-focussed coping and substance coping as indirect effects (i.e., mediators) yielded an adequate fit with the data (RMSEA=.087, $p<.001$; CFI=.66; TLI=.64; SRMR=.080). It is important to note that the RMSEA for the null model was below the recommended 0.158 cut-off (RMSEA=0.144), suggesting comparative fit indices (i.e., CFI and TLI) should be interpreted with caution (Kenny et al. 2011). The χ^2 test was significant (χ^2=4913.48, $p<.001$), which is typical given the sample size (i.e.,>400). However, the χ^2 test for the baseline model was also significant with an extensively higher χ^2 value (χ^2=12884.11, $p<.001$). In summary, the data fit the proposed theoretical model adequately. Overall, 26.0% of the variance in excessive Internet use was explained by the direct and indirect paths. The model with standardised estimates is shown in **figure 2**. Results showed all direct and indirect paths to be significant predictors of excessive Internet use (see **table 2**).

Discussion

The aims of this research were to replicate and extend previous findings (Brand et al. 2014) and explanations of the complexities of the relationships

Figure 1. *Standardised coefficients for types of dysfunctional coping predicting excessive Internet use*

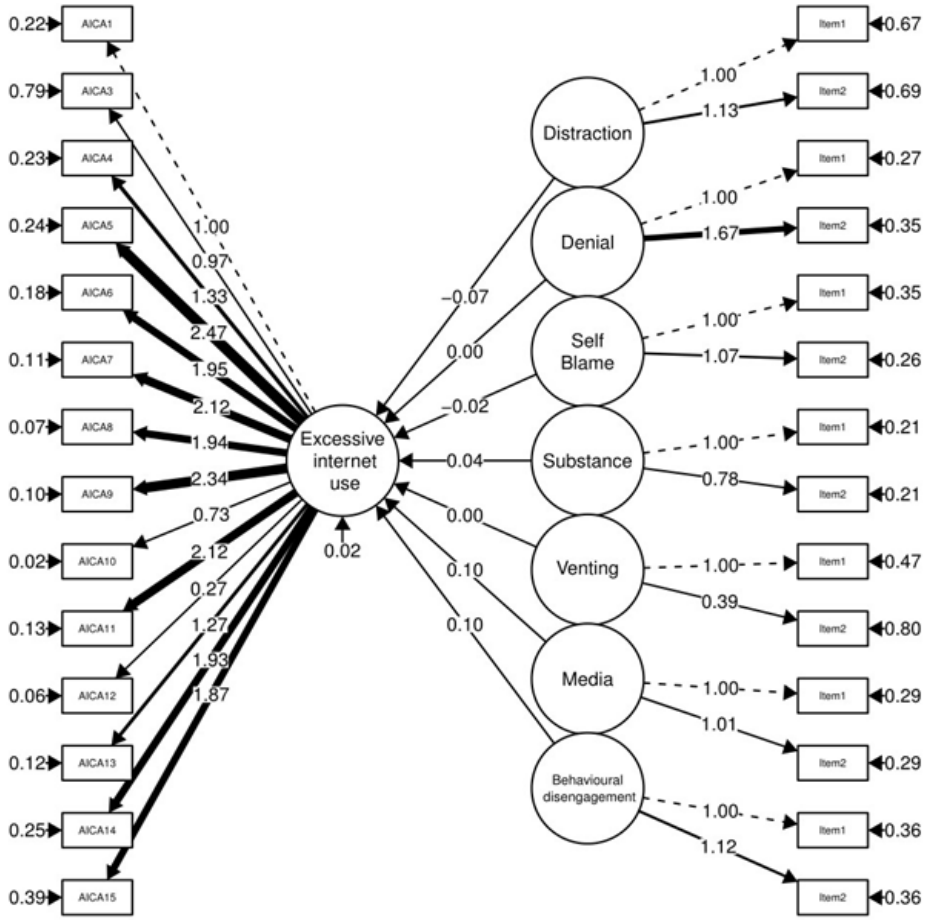


Figure 2. Structural equation model including standardised coefficients for direct (GSI) and indirect (GSI*Media & GSI*Substance) paths predicting excessive Internet use

Excessive Internet use ~	*B*	*SE*	*Z-value*	*P-value*
Distraction	*-0.065*	*0.037*	*-1.760*	*0.078*
Denial	*0.000*	*0.042*	*0.007*	*0.995*
Self-blame	*-0.025*	*0.017*	*-1.424*	*0.154*
Substance	***0.043***	***0.019***	***2.212***	***0.027***
Venting	*0.001*	*0.023*	*0.064*	*0.949*
Media-focused coping	***0.105***	***0.021***	***5.049***	***0.000***
Beh. disengagement	*0.104*	*0.061*	*1.696*	*0.090*

Note. significant paths are highlighted in bold; Standard Errors are estimated using bootstrapping (iterations = 5000); The symbol '~' signifies 'predicted by'.

Table 2. *Results of structural equation model paths for Model 2 including unstandardised coefficients*

	B	*SE*	*Z-value*	*P-value*
Direct effect:				
Excessive internet use ~				
GSI	***0.075***	***0.025***	***2.963***	***0.003***
Media	***0.073***	***0.018***	***3.960***	***0.000***
Substance	***0.051***	***0.021***	***2.475***	***0.013***
Indirect effect:				
Excessive internet use ~				
GSI*Media	***0.036***	***0.013***	***2.853***	***0.004***
GSI*Substance	***0.021***	***0.010***	***2.172***	***0.030***
Mediators:				
Media ~				
GSI	***0.494***	***0.132***	***3.730***	***0.000***
Substance ~				
GSI	***0.415***	***0.121***	***3.416***	***0.001***

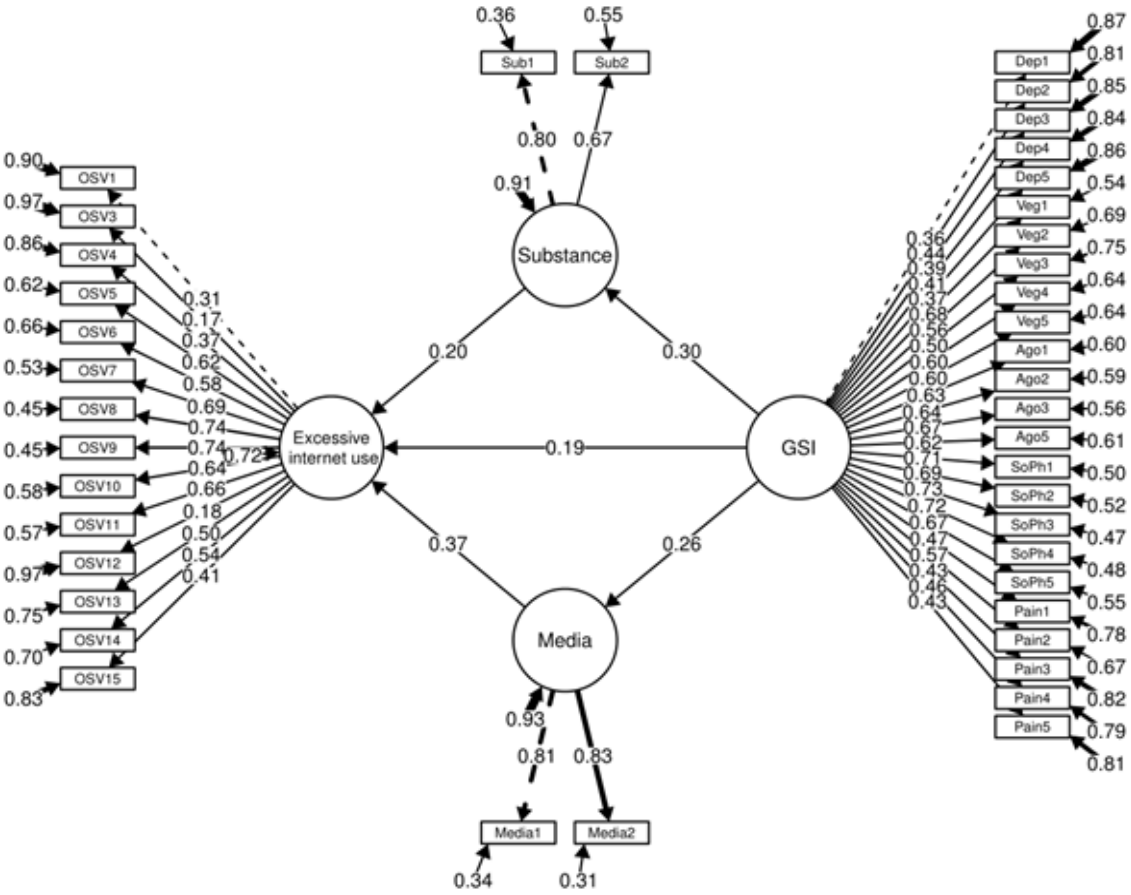
Note. significant paths ($p<0.05$) are highlighted in bold;
Standard Errors are estimated using bootstrapping (iterations = 5000);
The symbol '~' signifies 'predicted by'.

between excessive Internet use and psychopathology and also to assess factors that mediate the relationship between psychopathology and Internet addiction (Kardefelt-Winther 2014b). The findings indicate that the first model with dysfunctional coping strategies predicting excessive Internet use fit the data well. In addition to this, the second model, with media-focused and substance-related coping mediating the relationship between psychopathological symptoms (measured via the Global Severity Index) and excessive Internet use fit the data adequately. The respective results will be discussed subsequently.

Excessive Internet use and dysfunctional coping strategies

The present study's results indicate that not all types of dysfunctional coping should be assumed to impact excessive Internet use to the same extent. In this study, media-focused and substance use-related coping were the only significant predictors of excessive Internet use from the pool of dysfunctional coping strategies (including distraction, denial, self-blame, venting, behavioural disengagement, and media-focused and substance-related coping). These findings are not surprising in the light of previous research, which has established a clear link between media-focused coping and pathological Internet use in adolescents. Thalemann (2009) has shown that pathological online gamers tend to use dysfunctional coping strategies to deal with stress, and suggests that using media-focused coping allows individuals to cope with stress quickly and effectively. However, this strategy is an avoidance-based strategy which precludes effective and functional coping with everyday stressors (Thalemann 2009). Previous research (Han et al. 2009) has also shown that children with ADHD engage in online gaming for the purpose of self-medication. This lends support to the long-established self-medication hypothesis of addictive disorders, suggesting that individuals use substances in order to overcome painful affective states as well as related mental disorders (Khantzian 1985). Griffiths' (2005) incorporation of mood modification (i.e., the high or numbing effect of addictive behaviours) as an integral element in his biopsychosocial model of

Figure 2. *Structural equation model including standardised coefficients for direct (GSI) and indirect (GSI*Media & GSI*Substance) paths predicting excessive Internet use*



addiction further supports the present findings, and has been validated in many empirical studies subsequently, including research on Internet addiction (Kuss et al. 2014a, Kuss et al. 2014b).

The self-medication hypothesis (Khantzian 1985) may furthermore offer a partial explanation for why substance use coping mechanisms significantly predicted excessive Internet use in the present study. On the one hand and in line with the biopsychological framework of addictions (Griffiths 2005), the self-medication hypothesis may apply to both substances as well as behaviours, such as Internet use. On the other hand, research indicates high comorbidity rates for addictions with other addictions (Alegria et al. 2016) as well as high prevalence rates of addiction hopping, i.e., substituting one addiction for another, irrespective of whether these are substance-related or behavioural addictions (e.g., Blume 1994). Previous research (Van Rooij et al. 2014) has also showed that problematic gaming co-occurs with substance use. The present study's results offer further evidence for the contention that substance-related and behavioural addiction-related symptoms share similarities in a Polish university student sample, and future research should assess these associations in clinical samples in order to provide support for the American Psychiatric Association's (2013) recent decision to include a category on behavioural addictions in the most recent diagnostic manual, the DSM-5.

Excessive Internet use and psychopathology

This research found that psychopathological symptom experience as measured via the GSI significantly predicted excessive Internet use. The fact that psychopathology is also related to excessive Internet use is probably no surprise as a wide range of studies have demonstrated these relationships. For instance, Müller et al. (2014) have shown that individuals being treated for Internet addiction in specialised treatment centres in Germany show generally higher levels of psychopathology, and in particular depressive and dissociative symptoms. Similarly, Floros et al. (2014) found that a population of college students in Greece treated for Internet addiction showed high comorbidity with axis I and II disorders, and individuals with a comorbid diagnosis had significantly elevated GSI scores in comparison to patients with an Internet addiction diagnosis only. Accordingly, the presence of both psychopathological symptomatology as well as excessive Internet use may exacerbate the clinical picture, requiring careful consideration and development of appropriate treatment plans on behalf of healthcare professionals.

Excessive Internet use and psychopathology as mediated by types of dysfunctional coping

The present study has built on previous work (Brand et al. 2014) and has shown that particular types of dysfunctional coping (i.e., media-focused and substance use coping) mediate the relationship between psychopathological symptomatology (as measured via GSI) and excessive Internet use. This finding suggests that the additive number of psychopathological

symptoms related to excessive Internet use may be dependent upon what type of coping strategies an individual employs. The current research has shown that the strength of the relationship between psychopathology and excessive Internet use is altered if either substance or media coping are favoured as a form of coping by the individual. Specifically, including the respective coping strategies as mediators in the statistical model has significantly increased the predictive power of the model, suggesting psychopathology and dysfunctional coping have additive effects on excessive Internet use and Internet addiction. This finding is in line with Kardefelt-Winther's (2014b) recommendation to specify mediation models which take into consideration factors related to coping that may impact upon the relationship between psychosocial stress, wellbeing and Internet addiction.

Limitations

Despite its many strengths, this study had some limitations. Self-reports have been used which may not be as accurate as other assessments, such as behavioural measures and clinical interviews, because they require honesty and the capacity for self-reflection on behalf of the participants (Frankfort-Nachmias and Nachmias 1996). Nevertheless, in the present study, the problem of self-reports was attenuated by the fact that the survey was presented and carried out online. This not only ensured anonymity and thus offered a space for sincere self-disclosure (Griffiths 2010, Markham 2004), but it was also conducted in a context familiar to university students, namely the Internet (Kuss et al. 2013).

Moreover, it must be noted that the present cross-sectional design offered insights about relationships between the analysed variables without highlighting their specific direction. Consequently, only a longitudinal study will shed light upon the causality of the relationships between Internet addiction, psychopathology and coping. Thus, with a thought to the future, it is indispensable to conduct longitudinal studies in order to understand etiology, risk and resilience factors more comprehensively.

Implications and conclusions

The present research has significant implications for both clinical work as well as for future research endeavours. As regards research, the present study has expanded upon previous work (Brand et al. 2014) and showed that dysfunctional coping strategies mediate the relationship between psychopathological symptomatology and excessive Internet use in a Polish sample. Importantly, the findings have implications for prevention efforts targeting children and adolescents prior to the development of Internet use-related problems and psychopathology. Awareness should be increased among educators and parents that dysfunctional coping strategies may exacerbate problems related to Internet overuse and psychopathology, and strategies should be implemented to teach young individuals alternative functional coping strategies to deal with everyday stressors as these may serve to build their resilience. Future research might want to look at functional types of coping and assess the extent to which these may boost individuals' resilience to developing Internet-use related problems (Zimmer-Gembeck and Skinner 2016). In addition to this, there is still a limited number of relevant studies and therefore the research landscape requires further investigation and improvement, for example with a larger sample of patients and examining whether they were using psychotropic drugs, which ones, and for how long and/or if these patients suffer from other behavioural addictions.

This study's results provide some support for the current efforts of establishing an officially recognized diagnostic category for Internet addiction or Internet Gaming Disorder (American Psychiatric Association 2013). The high levels of distress and psychopathological symptom experience of individuals who suffer from excessive Internet use-related problems provide some evidence for the co-occurrence of mental and behavioural problems and symptoms. In line with this, including Internet use-related addiction as a discrete mental disorder can enable diagnosis, communication about, study, treatment and prognosis of this condition (American Psychiatric Association 2000). On the level of the individual, the recognition that excessive Internet use may in some cases be considered a psychopathology may serve destigmatization so that the condition is no longer tainted with negative connotations the way substance-related addictions often are (Musalek 2005), but that it is understood as a medical condition with neurobiological antecedents and consequences (Kuss and Griffiths 2012). However, the strong relationships with dysfunctional coping found in this study also indicate that excessive Internet use may be considered a dysfunctional coping strategy in its own right as has been discussed recently (Kardefelt-Winther 2016), suggesting further research is necessary as to the forms and functions of excessive Internet use prior to including it in an updated version of the diagnostic manuals.

This study has implications for clinical practice in the long run. Particularly, an official recognition of Internet addiction as mental disorder will facilitate financing treatments on behalf of health care and insurance providers once a sufficient evidence has been provided as to the extent to which excessive Internet use can be considered an addiction rather than a dysfunctional coping strategy. Simultaneously, it will provide a framework for establishing innovative social policies, which will tackle the provision of financial and human resources necessary for conducting supplementary research and providing mental health care for those in need. Conclusively, excessive Internet use and Internet addiction cannot be dismissed as transient and easily dispensable by-products of a technophilic generation's online media consumption, but should be regarded as a genuine mental health concern, exacerbated by the presence of psychopathological symptoms and dysfunctional coping styles.

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