



# Effects of psychological problems, emotional dysregulation, and self-esteem on problematic Internet use among Korean adolescents<sup>☆</sup>



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## ABSTRACT

The aim of this study was to examine the direct effects of psychological problems and emotional dysregulation and the mediating effect of self-esteem on problematic Internet use (PIU) among adolescents in South Korea. This study was conducted as a secondary analysis with the data from “The 2013 Validation Study of K-Scale as a Diagnostic Tool” by the Korean National Information Society Agency (N = 351). Our structural equation modeling analyses revealed that psychological problems and emotional dysregulation affected PIU by mediating low self-esteem; however, the direct effects of psychological problems and emotional dysregulation were not demonstrated. Thus, this study empirically verified that the cognitive-behavioral model of PIU provides a theoretical framework to describe the pathway to PIU among Korean adolescents. The results suggest that preventing and intervening for PIU should include effective strategies that improve self-esteem for adolescents.

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## 1. Introduction

The Internet is a major tool for information, communication, and entertainment in the daily lives of adolescents (Tsitsika et al., 2009). Despite the benefits of Internet use, problematic Internet use (PIU) negatively affects adolescent development (Greenfield & Yan, 2006). PIU is defined as “use of the Internet that creates psychological, social, school, and work difficulties in a person’s life” (Beard & Wolf, 2001, p. 378). Currently, PIU disorder is not formally listed in the American Psychiatric Association (2013) Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-V), although gambling disorder is included and Internet gaming disorder is listed in Section III, “conditions for further research and clinical experience.” Preoccupation with the Internet, tolerance, inability to control Internet use, changes in mood, withdrawal symptoms when not utilizing the Internet, loss of interpersonal relationships, and poor academic or work performance are symptoms of PIU (Young, 1998). Moreover, the problems caused by PIU are more serious in the adolescent population (Park, Kang, & Kim, 2014) and can persist into adulthood (Park, 2012). Therefore, greater attention should be paid to PIU in adolescents.

In South Korea, PIU among adolescents has been identified a significant public health issue (Korean Ministry of Science, ICT, and Future Planning, & Korean National Information Society Agency, 2015). According to the 2014 National Survey on PIU (Korean Ministry of Science, ICT, and Future Planning, & Korean National Information

Society Agency, 2015), the number of problematic Internet users has increased steadily among adolescents aged 10–19 years from 10.4% in 2011, to 10.7% in 2012, 11.7% in 2013, and 12.5% in 2014, and these rates are higher than those found in any other age group.

The cognitive-behavioral model of PIU provides a framework for understanding the etiology of PIU (Davis, 2001). According to Davis (2001), this model supposes that PIU is caused by problematic cognition linked with behaviors that magnify or sustain a maladaptive response. Specifically, in this model, distal and proximal contributory causes of PIU are introduced. Psychopathologies such as depression, social anxiety, and substance dependence, are contributory causes of PIU symptoms. However, it is important to note that, although psychopathology is a necessary distal cause, it does not, in and of itself, lead to PIU symptoms. Instead, psychological problems predispose people to develop maladaptive cognition leading to deficient control (Davis, 2001). Maladaptive cognition is a proximal and sufficient cause of PIU and is defined as distorted thoughts about the self and the world. These self-thoughts include negative views of the self such as self-doubt, low self-efficacy, and negative self-appraisal. Cognitive distortions about the world include the belief that the Internet is the only place to receive respect and an individual feeling that they are not liked by anyone offline (Davis, 2001).

Previous empirical studies have revealed that psychological problems, emotional dysregulation, and self-esteem are predictors of PIU. In terms of pathology, depression is a common predictor of PIU among Korean adolescents (Jang, Hwang, & Choi, 2008; Kim et al., 2006). Similarly, Akin and Iskender (2011) reported that depression and anxiety are positively related to PIU among Turkish college students. Additionally, Kim and Davis (2009) found that anxiety is a significant predictor

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of PIU among American college students. Furthermore, somatization is reported to be related to PIU among adolescents (Jang et al., 2008; Yen et al., 2008). Increasingly, theories of psychopathology have paid attention to emotional dysregulation (Silk, Steinberg, & Morris, 2003), which reflects deficits in the ability to regulate negative emotions or maintain positive emotions (Cole, Michel, & Teti, 1994). Similarly, previous studies report that mood regulation was related to PIU (Caplan, 2002; Kim & Han, 2010). Furthermore, Caplan (2010) tested the cognitive-behavioral model of PIU and reported that deficient mood regulation significantly affects PIU. Additionally, low self-esteem is a maladaptive cognition frequently identified as a determinant of PIU in adolescents (Aydin & Sari, 2011; Kim & Davis, 2009).

Davis' model (2001) has been determined to make important contributions to the existing literature in the field. This model provides a clear concept of PIU and has resulted in empirical tests (Caplan, 2002). This model differs from those used in previous studies, as it proposes that PIU does not cause psychological problems; instead, existing psychopathologies cause PIU through maladaptive cognition (Caplan, 2002). Despite the significance of this model, few studies have applied the cognitive-behavioral model of PIU to the Korean adolescent population, which has a high prevalence of PIU. Based on the cognitive-behavioral model of PIU, this study examined the direct effect of psychological problems and emotional regulation on PIU as well as the mediating effects of maladjusted cognition such as that related to self-esteem, on PIU among South Korean adolescents.

## 2. Methods

### 2.1. Research model

This study examined the both the direct effects of psychological problems and emotion dysregulation as well as the indirect effect that occurs through self-esteem on PIU. The independent variables were psychological problems and emotional dysregulation, and the dependent variable was PIU. The mediating variable was self-esteem.

### 2.2. Participants

The study is a secondary analysis of the data from "The 2013 Validation Study of K-Scale as a Diagnostic Tool" conducted by the Korean National Information Society Agency. The survey adopted a convenience sampling method. A total of 423 individuals participated in the study, including 363 students from four middle schools, 5 outpatients who visited Internet addiction counseling centers, and 53 adolescents who visited PC bangs, a type of LAN gaming center in Seoul. This study only included participants who were recruited from middle schools and excluded those who were recruited from counseling centers and PC bangs. Of the 363 adolescents recruited from middle schools, 12 did not provide sufficient data and were excluded from analysis. Therefore, data from 351 participants were included in the final analysis.

### 2.3. Measures

This study utilized the Korean Internet Addiction Proneness Scale (K-scale), which is a self-administered instrument that assesses PIU, developed by Kim, Kim, Park, and Lee (2002). The K-scale consists of 40 questions that are rated on a 4-point Likert scale ranging from "not at all" (1) to "always" (4). The instrument consists of seven subscales. The *Disturbance of Adaptive Functions* subscale consists of 9 items that assess the extent to which an individual's daily life is influenced by the Internet (e.g., "I have trouble with my family because of my excessive Internet use"). The *Disturbance of Reality Testing* subscale consists of 3 items that measure the level of inability to distinguish reality from fantasy (e.g., "I feel like I am accessing the Internet even though I am not"). The *Addictive Automatic Thoughts* subscale includes 6 items that evaluate the level of positive feelings or thoughts gained through

Internet use (e.g., "I feel catharsis when I am accessing the Internet"). The *Withdrawal* subscale consists of 6 items that assess the severity of symptoms that occur when not accessing the Internet (e.g., "I feel restless and on edge when I am not accessing the Internet"). The *Virtual Interpersonal Relationship* subscale consists of 5 items that examine the tendency to pursue virtual interpersonal relationships (e.g., "I communicate with people online much better than people in the real world"). The *Deviate Behavior* subscale consists of 6 items that measure the frequency of delinquent behaviors related to Internet use (e.g., "I access the Internet without parental permission"). Finally, the *Tolerance* subscale includes 5 items that evaluate the degree to which an individual increases frequency or duration of Internet access to become satisfied with Internet use (e.g., "I fail to decrease the amount of time spent on the Internet"). This scale has been validated in several recent studies (e.g., Kim, Huh, Bang, Kim, & Jeong, 2011; Kim et al., 2008). In the current study, the reliability of the total K-scale (Cronbach's  $\alpha$ ) was 0.96. The reliability of the subscales were as follows: 0.88 for *Disturbance of Adaptive Functions*, 0.78 for *Disturbance of Reality Testing*, 0.88 for *Addictive Automatic Thoughts*, 0.87 for *Withdrawal*, 0.85 for *Virtual Interpersonal Relationship*, 0.84 for *Deviate Behavior*, and 0.86 for *Tolerance*.

A total score was calculated by adding all seven subscale scores. A higher score indicates a higher level of PIU. High-risk Internet use was classified as follows: 104 points or higher for the total score, 21 or higher on the *Disturbance of Adaptive Functions* subscale, 16 or higher on the *Withdrawal* scale, or 15 or higher on the *Tolerance* scale, respectively. Participants who obtained a total score between 89 and 103 points, between 19 and 20 on the *Disturbance of Adaptive Functions* subscale, between 14 and 15 points on the *Withdrawal* subscale, or between 13 and 14 points on the *Tolerance* subscale were classified as at-risk Internet users. Finally, participants who obtained a total score of 88 or lower, 18 or lower on the *Disturbance of Adaptive Functions* subscale, 13 or lower on the *Withdrawal* subscale, or 12 or lower on the *Tolerance* subscale were classified as demonstrating normal Internet use.

Derogatis (2001) developed the Brief Symptom Inventory (BSI) to measure psychological problems. The BSI consists of 18 items. Six items are used to measure three of nine primary symptom dimensions, which include *Depression*, *Anxiety*, and *Somatization*. This study used a Korean version of the BSI that was validated by Park, Woo, and Chang (2012). The reliability of the *Depression* subscale (Cronbach's  $\alpha$ ) was 0.89, and the Cronbach's  $\alpha$  for the *Anxiety* and *Somatization* subscales were 0.91 and 0.91, respectively. Higher scores indicate higher levels of depression, anxiety, and somatization.

Additionally, this study utilized Gratz and Roemer's (2004) Difficulties in Emotion Regulation Scale (DERS). The Korean version of this scale was validated by Cho (2007). The questionnaire consists of 35 items that are rated on a 5-point Likert-type scale. Item 17 was excluded because factor and item analyses revealed that it was inconsistent with other items. The six factors included in this assessment were: *Impulse Control Difficulties*, *Lack of Emotional Awareness*, *Nonacceptance of Emotional Responses*, *Lack of Emotional Clarity*, *Limited Access to Emotion Regulation Strategies*, and *Difficulties Engaging in Goal-Directed Behavior* (Gratz & Roemer, 2004). In this study, the *Lack of Emotional Awareness* and *Lack of Emotional Clarity* factors were omitted from analysis because the factor loadings were very low. The *Impulse Control Difficulties* subscale consists of 6 items that measure an individual's level of difficulty controlling behaviors when experiencing negative emotions. The *Nonacceptance of Emotional Responses* subscale consists of 6 items that assess the tendency to show nonaccepting reactions to an individual's negative emotions or distress. The *Limited Access to Emotion Regulation Strategies* subscale includes 8 items that assess the level of belief that the individual has a number of ways to effectively regulate negative emotion. Finally, the *Difficulties Engaging in Goal-Directed Behavior* subscale consists of 5 items that measure an individual's level of difficulty paying attention to and completing goals when experiencing negative emotions. In this study, the reliability of the DERS (Cronbach's  $\alpha$ ) was 0.91. The Cronbach's alphas for the subscales were as follows: 0.78 for

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