Metacognitions or distress intolerance: The mediating role in the relationship between emotional dysregulation and problematic internet use

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ABSTRACT

Objective: Given the relevance of problematic Internet use (PIU) to everyday life, its relationship to emotional dysregulation and the importance of metacognitions and distress intolerance in process and intermediaries research, this study examined which of metacognitions and distress intolerance acts as an intermediary between emotional dysregulation and PIU.

Methods: In the current study, 413 undergraduate students from the University of Tehran, Iran (202 females; mean age = 20.13) voluntarily completed a questionnaire package which included the Internet Addiction Test (IAT), Difficulties in Emotion Regulation Scale (DERS), Metacognitions Questionnaire 30 (MCQ-30(, and Distress Tolerance Scale (DTS). The data were then analyzed using structural equation modeling by LISREL software.

Results: Significant correlations were found between PIU and emotional dysregulation and both distress intolerance and metacognitions ($P < 0.001$). Structural equation modeling and path analysis results fit well to the data ($\chi^2/df = 1.73$; $p < 0.001$; RMSEA = 0.05; SRMR = 0.04; CFI = 0.97; NFI = 0.95). The results of the mediational model indicated that emotional dysregulation has an indirect impact via metacognition ($\beta = 0.31$; SE = 0.02) and distress tolerance ($\beta = -0.60$; SE = 0.03) on PIU. The analysis also revealed a significant direct impact of emotional dysregulation on PIU, although this impact is much less than the indirect impact. The variables in this model accounted for 62% of the variance in participants' PIU levels.

Conclusion: The results of this study provide evidence for the impact of emotional dysregulation on PIU through metacognitions and distress intolerance. Also, these findings emphasize that distress intolerance has a more significant mediating role than metacognition in the relationship between emotional dysregulation and PIU.

1. Introduction

As a readily accessible source of information and entertainment for people of all ages, the Internet has become one of the primary necessities of life in almost all countries. Despite the various advantages bestowed by the World Wide Web, misuse of this technology can be dangerous and lead to Internet addiction (Li & Chung, 2006).

Problematic Internet Use (PIU), or excessive Internet use, is characterized by excessive or poorly controlled preoccupations, urges, or behaviors regarding computer use and Internet access that lead to impairment or distress (Young, 1996). PIU has been extensively researched since the mid-1990s, particularly in the Western and Asian countries. Although considerable evidence shows that PIU is associated with a number of negative health outcomes in adolescents and adults (Ko, Yen, Yen, Chen, & Chen, 2012; Kuss, Griffis, Karila, & Billieux, 2013), it was not officially classified as a clinical disorder in the latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013). This omission

indicates the need for further evidence on this emerging mental health epidemic (Young, 2016).

Tokunaga and Rains (2010) used structural equation modeling to compare possible etiologies based on correlations derived from meta-analyses of a range of studies. They tested a "clinical" model in which psychosocial problems led to Internet use with Internet "problems" as the outcome as well as a non-clinical "self-regulation" model in which psychosocial problems predicted PIU, which in turn led to time spent using the Internet. According to Tokunaga and Rains, the finding that time spent on the Internet predicted PIU and not the other way around supports the non-clinical self-regulation model as well as the view that generalized PIU is not a clinical issue, but instead, a result of poor self-regulation. In other words, general problematic Internet behaviors appear to be less about the Internet itself and more about poor self-regulation.

A possible explanation as to how Internet use may become problematic lies in it taking the form of a maladaptive self-regulatory strategy (LaRose, Lin, & Eastin, 2003; Spada, Langston, Nikčević, & Moneta,

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2008) rather than merely being used for problem-solving, entertainment and challenge (Caplan, 2007; Wan & Chiou, 2006). In support of this view, several studies have shown relationships between individual differences in automatic and controlled aspects of self-regulation and PIU (Billieux & Van der Linden, 2012). In recent years, increasing focus has been given to emotional dysregulation as a potentially transdiagnostic process of many forms of psychopathology. Emotional regulation has been defined as processes that serve to intensify, dampen, or maintain the behavioral, cognitive, experiential, or physiological aspects of emotion depending on an individual's goals (Gross & Thompson, 2007). Subsequent research has supported this conceptualization by demonstrating the role of emotional dysregulation in a wide range of clinical disorders (e.g., Lynch, Trost, Salsman, & Linehan, 2007; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Williams, Grisham, Erskine, & Cassedy, 2012) and PIU (Caplan, 2010; Casale, Caplan, & Fioravanti, 2016; Yu, Kim, & Hay, 2013). Some researchers have argued that individuals who have emotional dysregulation are more likely to engage in addictive behaviors in an attempt to avoid or minimize negative emotions and try to alleviate distressing feelings (Yu, Kim, & Hay, 2013). Similarly, Hormes, Kearns, and Timko (2014) have observed that problematic users of social networking sites, compared to non-problematic ones, are more likely to experience emotional dysregulation.

The presence of a positive association between emotional dysregulation and PIU is not sufficient to clarify the psychological mechanisms that often lead a person with deficits in regulating emotions to engage in PIU. Research on the beliefs about the usefulness of the Internet for alleviating negative feelings might help in clarifying whether or not those who engage in the problematic use of the Internet are motivated to do so because they perceive Internet use as a useful strategy for managing distress (Spada et al., 2008).

Recent conceptualizations of addictive behaviors have also emphasized the role of metacognition in the genesis and perpetuation of emotional dysregulation (Spada, Caselli, & Wells, 2009; Spada, Caselli, & Wells, 2013). A growing body of research has emphasized the role of metacognitions as mediators in the association between emotional dysregulation and addictive behaviors (e.g. Spada, Caselli, Nikčević, & Wells, 2015). According to the metacognitive model, metacognition refers to cognition applied to cognition and may be defined as any knowledge or cognitive processes involved in the appraisal, control, and monitoring of thinking. It is purported that since metacognition fulfills an executive function with regard to cognitive processing, it also plays a contributory role in emotional dysregulation (Wells, 2000). Metacognitions refer to beliefs about the meaning of internal events and ways of controlling them. It is thought that such beliefs are central to the initiation and perseveration of unhelpful coping strategies (i.e. extended thinking, thought suppression, threat monitoring, avoidance, and maladaptive behaviors) which, in turn, lead to emotional dysregulation (Spada et al., 2008; Spada et al., 2015). Also, Spada and Marino (2017) showed that metacognitions might lead to the activation of maladaptive coping strategies, such as rumination and worry, which in turn may increase the likelihood of utilizing the Internet as a means of cognitive-affective self-regulation. The results from this study provide an essential addition to the literature on PIU, suggesting that both the emotional regulation model and the metacognitive model might be used to develop a theory-driven conceptualization of PIU and associated treatment.

The emergence of emotion theories of psychological dysfunction (e.g., Gross, 1998) has led to a growing interest in the characteristics of emotion and its regulation. Recent work by Simons and Gahar (2005), applying Gross's (1998) emotional regulation paradigm, has highlighted the potential role of "distress intolerance" in the development and maintenance of psychological dysfunction (Ameral, Palm Reed, Cameron, & Armstrong, 2014; Anestis et al., 2012; Leyro, Zvolensky, & Bernstein, 2010; McHugh et al., 2014; Simons & Gaher, 2005; Zvolensky, Bernstein, & Vujanovic, 2011; Zvolensky & Otto,

2007; Zvolensky, Vujanovic, Bernstein, & Leyro, 2010). More recently, a particular line of theoretical work has begun emphasizing the role of distress intolerance as central to the development and persistence of psychological dysfunction (Ameral et al., 2014; McHugh et al., 2014; Zvolensky et al., 2010).

Distress tolerance reflects an individual's perceived or behavioral capacity to withstand experiential or subjective distress related to affective, cognitive, and physical states (e.g., negative affect, physical discomfort; Simons & Gaher, 2005; Zvolensky et al., 2011). Simons and Gaher (2005) suggested that affective distress tolerance is multidimensional in nature, involving an individual's anticipation of an experience with negative emotions, including (a) ability to tolerate; (b) assessment of the emotional situation as acceptable; (c) how the individual regulates her/his emotion; and (d) how much attention is absorbed by the negative emotion and how much it interferes with functioning.

Individuals with low levels of distress tolerance tend to experience negative affect as intense, disruptive, and unacceptable and tend to engage in behaviors aimed at reducing feelings of distress. It has been suggested that low levels of trait distress tolerance may potentially lead to adverse outcomes (e.g. substance abuse) as individuals attempt to use maladaptive behaviors to cope with negative affect (Simons & Gaher, 2005; Zvolensky et al., 2011).

Although previous research has shown that PIU is associated with adverse outcomes, most of these studies have not tried to shed light on the underlying mechanisms that lead to PIU. When people have difficulty with emotional regulation and delayed gratification, they often turn to the Internet for distraction. Thus, we propose that an increasing number of people, particularly university students, are less capable of withstanding a negative psychological state such as boredom and loneliness when they do not receive sufficient stimulation from the environment to maintain optimum arousal levels. The ability to deal with such a state is referred to as distress tolerance (Simons & Gaher, 2005; Zvolensky et al., 2011). When tolerance is low, we hypothesize that students will attempt to escape distressing situations by using mobile devices or a computer to browse the Internet. To this end, these individuals will use the Internet to control the amount of stimulation they receive, thereby providing relief from the distress. Furthermore, the habitual use of the Internet as an escape from distressing situations may lead to poor academic performance observed in those university students who experience PIU.

As is evident form the literature review, distress intolerance plays a significant role in the development and maintenance of some of the psychopathologies, but to date, no attempt has been made to investigate the possible links between PIU and distress intolerance. Moreover, because the mediation role of metacognitions in the relationship between emotional dysregulation and PIU has been supported by previous research, the current study seeks to assess for the first time the mediating role of distress intolerance in the relationship between emotional dysregulation and PIU and to compare it with the mediating role of metacognitions. Based on the above, the hypotheses of the current research are as follows:

(1) Metacognitions have direct and indirect impacts (through emotional dysregulation) on PIU.

(2) Distress intolerance has direct and indirect impacts (through emotional dysregulation) on PIU.

2. Methods

2.1. Participants

The current study was a cross-sectional study examining the direct and indirect effects (intermediate effects) of a set of variables. A sample size of 437 students was calculated using Krejcie and Morgan's table with a 95% trust rate and 10% loss rate. Inventories were distributed to 437 undergraduate students from the University of Tehran, Iran. The