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Stressful life events and adolescent Internet addiction: The mediating role of psychological needs satisfaction and the moderating role of coping style ☆

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ABSTRACT

Although stressful life events have been shown to play an important role in adolescent Internet addiction, little is known about mediating and moderating mechanisms underlying this relation. Based on the integration of self-determination theory and stress-coping theory, the present study investigated (a) the mediating role of psychological needs satisfaction in the relationship between stressful life events and Internet addiction, and (b) the moderating role of coping style in the indirect and direct relationships between stressful life events and Internet addiction. This model was tested with 998 Chinese adolescents (mean age = 15.15 years, SD = 1.57). Participants filled out questionnaires regarding stressful life events, psychological needs satisfaction, coping style, and Internet addiction. After demographic variables were controlled, stressful life events were significantly positively associated with Internet addiction. Mediation analysis revealed that psychological needs satisfaction partially mediated the association between stressful life events and Internet addiction. Moderated mediation analysis further indicated that the mediated path was weaker for adolescents with higher levels of positive coping style. These findings underscore the importance of identifying the mechanisms that moderate the mediated paths between stressful life events and adolescent Internet addiction.

1. Introduction

Adolescent Internet addiction has emerged as a major public health concern in recent years (Spada, 2014). There is now ample evidence to support that adolescent Internet addiction is highly prevalent worldwide, particularly in Asian countries such as China (Cheng & Li, 2014; Kuss, Griffiths, Karila, & Billieux, 2014). Moreover, Internet addiction has been found to contribute to poor physical health, academic challenges, and psychosocial problems (for reviews see Carli et al., 2013; Ko, Yen, Yen, Chen, & Chen, 2012). Therefore, it is important to examine risk factors and mechanisms that place adolescents at increased risk for Internet addiction.

Theorists have long argued that Internet addiction is a behavioral response to pre-existing stressful life events such as family conflict, academic underachievement, and peer rejection (Jun & Choi, 2015; Snodgrass et al., 2014). Specifically, stressful life events often cause various psychological strains to an individual, and Internet use may be an important way of cognitive and behavioral diversion that an individual uses to cope with life stressors and regulate his/her negative affect. A substantive body of work has established that stressful life events are an important risk factor for adolescent Internet addiction (Jun & Choi, 2015; Li, Zhang, Li, Zhen, & Wang, 2010; Xie, Zhou, Xu, & Peng, 2010). For example, Lam, Peng, Mai, and Jing (2009) found that stressful life events were positively associated with adolescent Internet addiction. Similarly, Mai et al. (2012) found that stressful life events positively predicted adolescent Internet addiction. These findings suggest that stressful life events play an important role in adolescent Internet addiction.

Nonetheless, prior research has focused primarily on the direct

link between stressful life events and adolescent Internet addiction, and the roles of mediating and moderating variables that may be involved in this association remain largely unexplored. Determining its mediating and moderating mechanisms would be critical to advance our understanding of Internet addiction, as well as to develop effective intervention and outreach strategies (Grant et al., 2014). The present study aims to test a conceptual model in which, first, stressful life events reduce psychological needs satisfaction, which in turn increase the likelihood of adolescent Internet addiction; second, the direct and/or indirect associations between stressful life events and Internet addiction through psychological needs satisfaction are moderated by coping style. Given the large adolescent Internet user population (147 million aged 10–19 years Internet users; China Internet Network Information Center, 2016) and the high prevalence of Internet addiction in China (Weinstein, Feder, Rosenberg, & Dannon, 2014), we tested our model in a sample of Chinese adolescents.

1.1. The mediating role of psychological needs satisfaction

According to self-determination theory (Deci & Ryan, 2000), humans have fundamental, universal psychological needs for autonomy (i.e., the feeling of being self-determining in one's behaviors), relatedness (i.e., the feeling of closeness and connectedness to others), and competence (i.e., the feeling of dealing with issues in a competent way). These basic psychological needs are essential "nutriments" for individual well-being and thriving. If adolescents cannot satisfy their psychological needs in one social context for a long time, they would become maladjusted or they would be motivated to seek satisfaction in other social contexts (Deci & Ryan, 2000). From this perspective, psychological needs are not only experiential *outcomes* that are affected by social contexts, but also internal *motives* that prompt ameliorative behavior when an essential experience is lacking (Sheldon & Gunz, 2009; Sheldon, Abad, & Hinsch, 2011). In other words, basic psychological needs satisfaction is a key motivational mechanism that explains how social environmental factors influence human development. Drawing from this theory, we propose that the satisfaction of psychological needs may be an important mediator in the relationship between stressful life events and adolescent Internet addiction. Some evidence has indirectly supported this mediation process.

First, exposure to stressful life events may affect the satisfaction of adolescent psychological needs (needs-as-outcome). Specifically, the satisfaction of psychological needs largely depends on the extent to which the social and ecological environments respond to the psychological demands. Severe stressful life events would impair adolescent psychological needs satisfaction. Researchers have found that when the number of stressful life events increases, individuals' satisfaction of psychological needs decreases (Raufelder et al., 2014; Xia & Ye, 2014; Ye, Yu, & Hu, 2013).

Second, unsatisfied psychological needs are a major source of adolescent motivation to use the Internet (needs-as-motivation). When adolescents cannot satisfy their psychological needs in real life, they may turn to Internet activities for compensation (Kardefelt-Winther, 2014). In fact, many Internet applications are designed to provide opportunities and incentives to satisfy users' motivations (Nadkarni & Hofmann, 2012; Ryan, Rigby, & Przybylski, 2006; Sheldon et al., 2011), making the Internet an appeal for adolescents to fulfill their unsatisfied psychological needs. Empirical research has found that individuals whose basic psychological needs are not met in real life are more likely to experience psychological distress, which in turn increases the possibility of Internet addiction (Wong, Yuen, & Li, 2015; Yu, Li, & Zhang, 2015; Yu et al., 2012).

To date, no studies have directly examined the mediating role of psychological needs satisfaction in the relationship between stressful life events and adolescent Internet addiction. Based on the literature reviewed above, we propose the following hypothesis:

Hypothesis 1. Stressful life events will negatively impact adolescent psychological needs satisfaction, which in turn will increase adolescent Internet addiction. That is, psychological needs satisfaction will mediate the association between stressful life events and adolescent Internet addiction.

1.2. The moderating role of coping style

Although stressful life events may impact adolescent Internet addiction through the mediating role of psychological needs satisfaction, not all adolescents who experience stressful life events homogeneously experience decreased levels of psychological needs satisfaction and suffer from Internet addiction (Li et al., 2010). Heterogeneity of outcomes may originate from individual characteristics that moderate (i.e., buffer or exacerbate) the impact of stressful life events on Internet addiction, for example, coping style. Coping style refers to a person's general tendency or enduring disposition to handle stressors with a specific constellation of coping strategies (Lazarus & Folkman, 1984). Positive/approach coping includes strategies such as problem-solving, support seeking, and cognitive restructuring that aim to directly address the stressors (Zheng, Fan, Liu, & Mo, 2012). Negative/avoidant coping, in contrast, includes strategies such as denial, blaming, social withdrawal, and disengagement that aim to avoid the stressful situations (Zheng et al., 2012). Note that these two coping styles reflect different constructs rather than opposite ends of a continuum. Recent research has documented that coping style plays an important role in adolescent Internet addiction (Li & Lei, 2005; Trnka, Martínková, & Tavel, 2015; Zhou, 2009). For instance, Zhou (2009) found that positive coping (e.g., problem solving, seeking social support) was negatively associated with Internet addiction, whereas negative coping (e.g., wishful thinking, withdrawal, self-blame) was positively associated with Internet addiction.

Moreover, coping style may moderate the direct and/or indirect relationships between stressful life events and Internet addiction. According to stress-coping theory (Carver & Vargas, 2011; Lazarus & Folkman, 1984), a stressor will not negatively impact individuals who possess effective coping resources. In other words, "it is not stress alone that counts in a person's overall well-being but how well the individual copes with this stress. . . . If coping is ineffective, stress is apt to be substantial and may have damaging consequences for health, morale, and social functioning. If coping is effective, stress is likely to remain under control" (Lazarus, 2006, p. 20). In support of this theory, researchers found that coping style moderated the relationship between stressful life events and a wide range of developmental outcomes, including substance use, externalizing problems, and internalizing problems (Gonzales, Tein, Sandler, & Friedman, 2001; Kraaij et al., 2003; Lewis, Byrd, & Ollendick, 2012; Vera et al., 2011; Wills, 1986; Zheng et al., 2012). To our knowledge, no studies have examined coping style as a moderator of the direct and/or indirect associations between stressful life events and adolescent Internet addiction. Based on the stress-coping theory and empirical evidence, we propose the following hypothesis:

Hypothesis 2. The direct and/or indirect associations between stressful life events and Internet addiction via psychological needs satisfaction will vary as a function of adolescent coping style. Specifically, positive coping will attenuate the path between stressful life events and Internet addiction via psychological needs