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Associations between psychosocial factors and generalized pathological internet use in Chinese university students: A longitudinal cross-lagged analysis



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ABSTRACT

This short-term longitudinal study examined the reciprocal associations among preexisting psychosocial variables (shyness, loneliness, and interpersonal relationships), maladaptive cognitions, and generalized pathological Internet use (GPIU) in a Chinese sample. A total of 361 university freshmen (138 males; mean age = 18.57 years) participated in the study. Cross-lagged panel analysis indicated that (i) the associations among shyness, maladaptive cognitions, and GPIU were dynamic and bidirectional, and the increased maladaptive cognitions bidirectionally mediated the relation between shyness and GPIU across time; (ii) the association between interpersonal relationships and GPIU was dynamic; and (iii) the association between loneliness and GPIU was dynamic and bidirectional. Additionally, (iv) shyness and GPIU had higher stability than interpersonal relationships, loneliness, and maladaptive cognitions did and (v) gender differences were identified in GPIU (T1 and T2). Interventions for GPIU and implications for future studies were discussed.

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1. Introduction

Using the Internet has become one of the most popular leisure-time activities among adolescents aged 10–21 years in China (Liu, Fang, Deng, & Zhang, 2012). More than 287 million adolescents are Internet users, making this age cohort the largest population of Internet users (China Internet Network Information Center [CNNIC], 2016). Previous research in China has reported pathological Internet use and dependency in approximately 8% of adolescents (Fan et al., 2008; Lei & Yang, 2007; Liu et al., 2012; Luo & Peng, 2008). Concern about the large number of adolescents using the Internet has led to increased research into the possible adverse effects of Internet use on adolescent well-being, academic achievement, and socialization (Chen, 2012; Fan et al., 2008; Lei & Yang, 2007; Liu et al., 2012; Lu & Yeo, 2015; Luo & Peng, 2008;

Niculović, Živković, Manasijević, & Štrbac, 2014).

The anonymity and absence of nonverbal and demographic cues provided by the Internet can be beneficial to adolescents' well-being by offering relief from emotional distress (Caplan & Turner, 2007), as well as enhancing perceptions of social support and self-esteem (Kraut et al., 2002) and expanding the ranges of interpersonal relationships (Cotten, 2008). However, pathological Internet use (PIU), which is characterized by excessive or compulsive Internet use and a preoccupation with and loss of control over this use, results in negative personal and professional consequences (Caplan, 2002; Davis, 2001) and may be detrimental (Greenfield & Yan, 2006). The number of adolescent Internet users in China has increased rapidly from 120 million in 2002 to 287 million as of the time of publication (CNNIC, 2016), placing growing numbers at the risk of developing PIU. This large population and the increasing trend indicate that investigating how adolescents acquire PIU and developing effective intervention techniques for PIU are imperative. A number of studies have demonstrated that adolescents with PIU usually suffer from loneliness (Engelberg & Sjoberg, 2004; Turkle, 2011; Young, 1998), shyness (Eroglu, Pamuk, & Pamuk, 2013), poor interpersonal relationships (Odaci & Çikrikçi, 2014; Sanders, Field, Diego, & Kaplan, 2000), cognitive

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distortion (Lu & Yeo, 2015) and other decreases in well-being (Liu et al., 2012; Lu & Yeo, 2015). Therefore, investigating the detailed relationships of these variables and PIU is necessary.

2. Literature review

In identifying the etiology of PIU, the cognitive-behavioral model offers theoretical explanations of the origins and pathogenesis of GPIU (Davis, 2001, Fig. 1). Davis (2001) suggested that psychopathology (such as depression, social anxiety, and substance dependence) is a distal necessary cause of symptoms of GPIU. Notably, he argued that underlying psychopathology does not in itself result in symptoms of GPIU, but is a necessary element in its etiology. The key factors of GPIU are maladaptive cognitions, which are proximal sufficient causes. Furthermore, some studies have indicated that distal psychopathology renders an individual vulnerable to GPIU through maladaptive cognitions (Caplan, 2005; Kalkan, 2012; Li & Wang, 2013; Liu & Peng, 2009; Lu & Yeo, 2015; Mai et al., 2012). Additionally, the social context of the individual contributes to the causal pathway of GPIU—specifically, through social isolation and a lack of social support from family and friends (Davis, 2001; Liu et al., 2012; Lu & Yeo, 2015).

On the basis of the cognitive-behavioral theory described by Davis (2001) and previous studies (Caplan, 2005; Kalkan, 2012; Li & Wang, 2013; Liu & Peng, 2009; Lu & Yeo, 2015; Mai et al., 2012), preexisting psychosocial variables (shyness, loneliness, and interpersonal relationships) related to GPIU were selected. Specifically, shyness tends to be a distal necessary cause of PIU symptoms, because the core trait of shyness is social anxiety (McCabe, 2015; Snyder, Smith, Augelli, & Ingram, 1985), which renders an individual vulnerable to GPIU through maladaptive cognitions. Additionally, social support is a significant predictor of interpersonal relationships and loneliness (Solomon, Bensimon, Greene, Horesh, & Eindor, 2015; Zhang, Gao, Fokkema, Alterman, & Liu, 2015), which tend to be the causal pathway of GPIU rather than its distal necessary cause. Therefore, this study identified maladaptive cognitions as important predictors and proximal causes of PIU, whereas shyness was identified as the distal necessary cause of GPIU and interpersonal relationships and loneliness as its causal pathway.

Although numerous studies have shown a significant relationship between preexisting psychosocial variables (shyness, loneliness, and interpersonal relationships), maladaptive cognitions, and GPIU, few of them have directly tested the directionality of this association. For example, most studies examining the links between shyness and GPIU have looked unidirectionally from either shyness to GPIU (Caplan, 2002; Casale & Fioravanti, 2011), GPIU to shyness (Eroglu et al., 2013), or from shyness to GPIU through maladaptive cognitions (Tian, Bian, Han, Wang, & Gao, 2015). However, it may be that the associations among shyness, maladaptive cognitions, and GPIU are bidirectional, with each characteristic mutually influencing another. An understanding of the directionality of the associations among shyness, maladaptive cognitions, and GPIU has important practical implications for intervention efforts. Intervention based on incorrect assumptions of the nature of the directionality of associations may prove to be ineffective. For example, if the goal of an intervention is to decrease GPIU and shyness is not the antecedent but the effect of decreasing maladaptive cognitions, an intervention aimed at decreasing shyness would be unlikely to decrease GPIU. If shyness and maladaptive cognitions influence each other over time, interventions can benefit from targeting both shyness and maladaptive cognitions.

To our knowledge, little research has addressed the directionality of associations among preexisting psychosocial variables (shyness, loneliness, and interpersonal relationships), maladaptive cognitions, and GPIU. One study examined causal priority in the observed empirical relationship between Internet addiction and loneliness. The results indicated that excessive and unhealthy Internet use increases feelings of loneliness over time (Yao & Zhong, 2014). This study enhanced previous research by using Chinese samples. However, it had some limitations. First, the time span between the two waves of surveys might have been too short to detect a stable change in Internet addiction and loneliness over time. Furthermore, because only two time points were applied in the cross-lagged model, examining the dynamic association between Internet addiction and loneliness across time was not possible. Excessive and unhealthy Internet use may increase feelings of loneliness, and increased loneliness may further increase excessive and unhealthy Internet use. Second, the observed

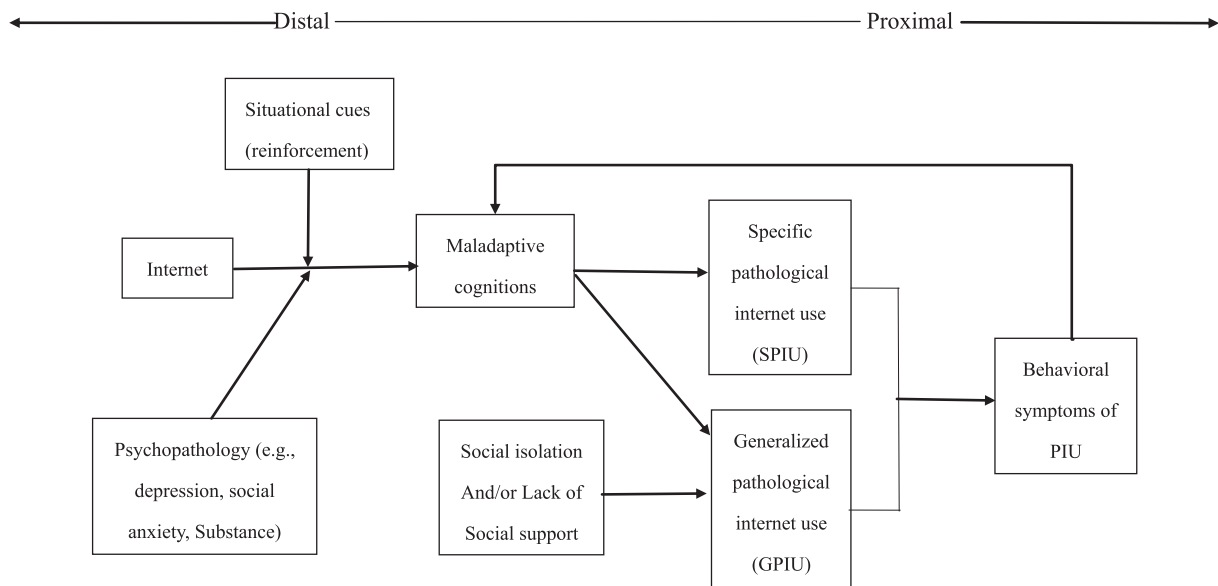


Fig. 1. The cognitive-behavioral model of pathological Internet use (PIU). Adapted from Davis (2001).

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