Perceived parental monitoring and adolescent internet addiction: A moderated mediation model

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A B S T R A C T
Bronfenbrenner's (1979) ecological model focuses on the interrelation between different contexts and the interaction between individuals and their proximal contexts. Based on this theory, the present study tested a moderated mediation model of family, peer, and individual characteristics to investigate how they impact adolescent Internet addiction. Specifically, we examined whether deviant peer affiliation partially mediated the relation between perceived parental monitoring and adolescent Internet addiction, and whether this indirect relation was moderated by effortful control. A total of 747 Chinese middle school students filled out anonymous questionnaires concerning perceived parental monitoring, deviant peer affiliation, effortful control, and Internet addiction. The findings indicated that while the impact of parental monitoring on Internet addiction was partially mediated by deviant peer affiliation, effortful control moderated the first stage of the indirect relationship. For low effortful control adolescents, perceived parental monitoring negatively predicted deviant peer affiliation. Conversely, the indirect path was not significant for high effortful control adolescents. These findings highlight the need to consider family, peer and individual factors simultaneously when evaluating risks associated with adolescent Internet addiction and have important implications for the prevention and intervention of adolescent Internet addiction.

1. Introduction

The Internet has become an important tool for accessing information, interaction, and entertainment in modern society. However, the impact of Internet use on individuals' psychosocial well-beings has increasingly become a great concern especially after recent research has identified a heightened negative impact of Internet addiction (Aboujaoude, 2010; Lam, 2014). Internet addiction can be broadly conceptualized as an inability to control one's use of the Internet which leads to negative consequences in daily life (Spada, 2014). Recent research has shown that Internet addiction impedes adolescent academic adjustment (Salmela-Aro, Upadyaya, Hakkarainen, Lonka, & Alho, 2017) and leads to mental health (Ciarrochi et al., 2015; Salmela-Aro et al., 2017) and substance use problems (Gámez-Guadix, Calvete, Orue, & Las Hayas, 2015). Compared with adults, adolescents are more vulnerable to Internet addiction, because they have high novelty seeking but low self-control (Spada, 2014) and are particularly sensitive to peer influence (Somerville, 2013). Therefore, identification of risk factors associated with adolescent Internet addiction is important for developing effective prevention and intervention strategies.

Family is the most enduring and central setting of child development (Bronfenbrenner, 1979). Family factors also occupy a central role in the onset and intensification of adolescent Internet addiction (Li, Garland, & Howard, 2014). As a significant aspect of the family system, parental monitoring is closely related to adolescent Internet addiction (Warberg, Aden, Tomsen, & Thomasius, 2015). Parental monitoring is conceptualized as parents' knowledge of their children's whereabouts, companions, and activities (Fletcher, Darling, & Steinberg, 1995). Social control theory (Hirschi, 1969) proposed that deviant behaviors could be reduced by the control from conventional socialization agents (e.g., parents, teachers). Parental monitoring could function as a key mechanism of social control to constrain deviant behaviors through awareness of and interest in adolescent behaviors (Longmore, Manning, & Giordano, 2013). When parents stay informed about adolescents' behaviors, they will respond appropriately to their misbehaviors and provide intervention in time (Fosco, Stormshak, Dishion, & Winter, 2012). Conversely, a lack of adequate monitoring will cause adolescents to experience a process called premature autonomy, which increases the risk for poor outcomes (Dishion, Nelson, & Bullock, 2004). Considerable evidence indicates that effective parental monitoring is negatively associated with adolescent Internet addiction.
addiction (Kwon, Chung, & Lee, 2011; Lin, Lin, & Wu, 2009; Xu, Su, & Lin, 2012; Yen, Ko, Yen, Chang, & Cheng, 2009). For example, in a large sample of Chinese adolescents, Xu et al. (2012) found that greater parental knowledge and awareness of adolescents’ activities have been associated with lower levels of Internet addiction. Similarly, in a sample of Taiwanese adolescents, Yen et al. (2009) found that perceived low parental monitoring was a significant discriminative factor for Internet addiction.

Although the direct link between perceived parental monitoring and Internet addiction has been extensively examined in prior studies, the underlying mediating and moderating mechanisms still remain unknown. According to Bronfenbrenner’s (1979) ecological model, the development of problem behaviors could be explained by the interrelationships among different ecological factors (i.e., one ecological factor can affect another ecological factor, which in turn is related to developmental outcome) and the interaction between ecological factors and individual characteristics (i.e., the impact of an ecological factor may vary as a function of one’s own characteristics). Inspired by this theory, we investigated the role of deviant peer affiliation (i.e., peer factor) as a mediator and the role of effortful control (i.e., personal characteristic) as a moderator in the relation between perceived parental monitoring (i.e., family context) and adolescent Internet addiction. Mediators establish “how” or “why” one variable predicts an outcome variable and moderators address “when” or “for whom” a variable is more strongly related to an outcome (Holland, Shore, & Cortina, 2016). Thus, this moderated mediation model allows for assessment of how and for whom perceived parental monitoring is related to adolescent Internet addiction.

1.1. Deviant peer affiliation as a mediator

Adolescence is a period when peers become increasingly influential to a child’s development (Steinberg & Monahan, 2007). Affiliation with deviant peers can significantly increase the risk of a variety of problem behaviors (Vitulano, Fite, & Rathert, 2010; Zhu et al., 2016). Deviant peer affiliation may also be a vital predictor of adolescent Internet addiction (Zhang, Chen, Liu, Deng, & Fang, 2012). According to social learning theory (Bandura, 1977), adolescents in deviant peer groups may become fascinated with the Internet by observing and imitating their peers’ behaviors. More importantly, they will receive reinforcement from their deviant friends, and feel pressure to conform to their friends’ deviant norms. Consistent with this view, empirical studies have documented that adolescents affiliating with deviant peers are more likely to become Internet addicts (Li, Newman, Li, & Zhang, 2016; Zhu, Zhang, Yu, & Bao, 2015).

According to Bronfenbrenner’s (1986) ecological model, family and peers are two closest microsystems which adolescents have direct contact with. Moreover, the processes operating in these two microsystems are not independent of each other. The interrelationships between the two microsystems form the level of mesosystem. In light of mesosystem model, a negative family context (e.g., parental monitoring) may be a contributing factor in adolescents’ drifting toward an adverse peer context (e.g., deviant peer affiliation). Parental monitoring could be seen as a remote control of children’s activities in the parents’ absence and children whose parents knew their whereabouts were less susceptible to deviant peer influence (Steinberg, 1986). Conversely, if parents cannot detect warning signals in time or help to structure their children’s peer relations, adolescents will be inclined to turn to deviant peers. Consistent with this view, some empirical research has found that adolescents who are not adequately monitored by their parents are at increased risk for deviant peer affiliation (Bowman, Prelow, & Weaver, 2007; Fosco et al., 2012).

Thus, based on the theory and literature reviewed above, it is reasonable to expect that deviant peer affiliation will partially mediate the relationship between perceived parental monitoring and adolescent Internet addiction. We believe partial mediation is probable, given that perceived parental monitoring may also directly or indirectly (via other mediators) impact Internet addiction (Xu et al., 2012).

1.2. Effortful control as a moderator

Although poor parental monitoring is a significant contextual risk factor in adolescent adjustment (Hoeeve et al., 2009), it does not lead to problems for all adolescents. Ecological model underscores the interactions between the individual and their immediate environments (Bronfenbrenner & Morris, 1998). In other words, adolescents with different intrapersonal characteristics may respond differently to similar environmental contexts. In this study, we examined whether effortful control would act as a moderator in the indirect relationship between parental monitoring and Internet addiction.

Effortful control refers to the ability to inhibit a dominant response in order to perform a non-dominant response (Rothbart & Bates, 2006). It consists of the voluntary process of attention regulation, the inhibition of inappropriate behaviors, and behaving in an adaptive manner (Kochanska, Murray, & Harlan, 2000). There is substantial literature documenting that adolescents with low effortful control are more likely to develop problem behaviors in general (Rothbart and Bates, 2006) and Internet addiction in particular (Li, Dang, Zhang, Zhang, & Guo, 2014; Ozdemir, Kuzucu, & Ak, 2014; Zhang, Li, & Li, 2015).

More importantly, effortful control may moderate the indirect relationship between perceived parental monitoring and Internet addiction. Various studies have documented how effortful control was an important protective factor in the presence of contextual risk factors. For example, Lengua, Bush, Long, Kovaes, and Tranck (2008) found that effortful control moderated the relations of socioeconomic, maternal (i.e., adolescent parent status, maternal depression, and maternal history of mental health or legal problems) and environmental risk factors and internalizing and externalizing problems. According to ecological model, personal characteristics play a central role in determining both the contexts individuals select into and the ways contexts influence their development (Bronfenbrenner & Morris, 1998). Applied to our research, effortful control may also play a protective role in these two ways. First, in spite of having poor parental monitoring, adolescents high in effortful control may not select into deviant peer context. Adolescents with high effortful control have the ability to modulate their negative emotions and behaviors elicited by family risk factors (Lengua et al., 2008). Additionally, individuals with high effortful control are more capable of developing positive interpersonal relations (David & Murphy, 2007) and they are less likely to leave their prosocial peer groups and associate with deviant peers. Second, effortful control may attenuate the link between deviant peer affiliation and Internet addiction. There are some contingencies within deviant peer contexts that reinforce youth deviant behaviors (Gardner, Dishion, & Connell, 2008). Adolescents with high effortful control could employ more adaptive appraisals and coping strategies for improved resistance to these reinforcement contingencies. Thus, they are not likely to be addicted to the Internet.

1.3. The present study

On the basis of Bronfenbrenner’s (1979) ecological model, this study included parental monitoring and deviant peer affiliation as contextual factors and effortful control as an individual factor to construct a moderated mediation model to examine the underlying mechanisms of Internet addiction. Specifically, we propose the following hypotheses: (a) perceived parental monitoring will be negatively associated with adolescent Internet addiction, (b) the relation between perceived parental monitoring and adolescent Internet addiction will be partially mediated by deviant peer affiliation, and (c) the indirect relation between perceived parental monitoring and Internet addiction through deviant peer affiliation will be moderated by effortful control. This moderated mediation model is presented in Fig. 1.