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# Perceived school climate and adolescent Internet addiction: The mediating role of deviant peer affiliation and the moderating role of effortful control



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#### ABSTRACT

Although recent studies have documented that perceived negative school climate is associated with adolescent Internet addiction, little is known about the mediating and moderating mechanisms underlying this relation. The present study examined whether deviant peer affiliation mediated the relationship between perceived school climate and adolescent Internet addiction, and whether this mediating process was moderated by adolescent effortful control. Our theoretical model was tested using data collected from 2758 Chinese adolescents (mean age = 13.53 years, SD = 1.06). After controlling for demographic variables, perceived school climate was positively associated with adolescent Internet addiction. Mediation analyses revealed that deviant peer affiliation partially mediated the association between perceived school climate and adolescent Internet addiction. Tests of moderated mediation further indicated that the mediated path was weaker for adolescents with higher effortful control. Results highlight the significance of identifying the mechanisms that moderate the mediated paths between perceived school climate and adolescent Internet addiction.

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#### 1. Introduction

Adolescent Internet addiction has emerged as a major concern in recent years. Literature reviews have shown that Internet addiction is highly prevalent around the world (Kuss, Griffiths, Karila, & Billieux, 2014) and is linked to a variety of maladaptive outcomes, including physical health challenges, academic failures, and emotional and behavioral problems (Carli et al., 2012; Ko, Yen, Yen, Chen, & Chen, 2012). A careful scrutiny of the risk factors and relevant mechanisms for Internet addiction is needed to enable prevention and intervention efforts. Although many social and ecological risk factors have been identified (Li, Garland, & Howard, 2014), few studies have investigated the role of school factors in the development of adolescent Internet addiction.

More recently, researchers have begun to examine the association of perceived school climate with adolescent Internet addiction. School climate refers to the relatively stable property of the school

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environment that affects students' behavior and is based on their perceptions of behavior in schools (Hoy & Hannum, 1997). Even in the same school, individuals may select and modify their own micro environment, thus they may have different school experiences and perceive their school differently (Morin, Maïano, Marsh, Nagengast, & Janosz, 2013). School climate plays an important role in the development of adolescent problem behaviors. According to the stage-environment fit theory (Eccles et al., 1993), adolescents have optimal development when school contexts adequately satisfy their developmental needs. However, when the school is unsupportive or unsafe, they are more likely to suffer from problem behaviors. In line with this theory, several studies have found that school climate predicted adolescent problem behaviors in general (Jia et al., 2009; Loukas, Suzuki, & Horton, 2006; Wang, Selman, Dishion, & Stormshak, 2010) and Internet addiction in particular (Jiang & Huang, 2008; Zhu, Zhang, Yu, Zhou, Sun, & Zhen, 2015). For example, Jiang and Huang (2008) found that negative school climate were associated with adolescent Internet addiction. Likewise, Zhu, Zhang, Yu, Zhou, et al. (2015) found that perceived school climate significantly predicted adolescents' online gaming addiction (a subtype of Internet addiction).

These studies have made valuable contributions, however, little is known about the mediating (i.e., how perceived school climate relates to Internet addiction?) and moderating (i.e., when the link is most potent?) mechanisms underlying the relation between perceived school climate and adolescent Internet addiction. To address these gaps, the present study utilized a large sample of Chinese adolescents to test a moderated mediation model in which, first, deviant peer affiliation mediated the link between school climate and adolescent Internet addiction; second, the indirect association between perceived school climate and Internet addiction through deviant peer affiliation was moderated by effortful control.

#### 1.1. The mediating role of deviant peer affiliation

Adolescence is a developmental period in which peers, especially those who engage in deviant behaviors, become particularly influential in the socialization and development of problem behaviors. A large body of empirical research has shown that adolescents who affiliate with deviant peers are at high risk for various problem behaviors including depression, substance use, and delinquency (Fergusson, Swain-Campbell, & Horwood, 2002; Fergusson, Wanner, Vitaro, Horwood, & Swain-Campbell, 2003). Recent studies have also documented that adolescents who affiliate with deviant peers are at elevated risk for Internet addiction (Ko et al., 2008; Song et al., 2014; Yen, Ko, Yen, Chang, & Cheng, 2009; Zhu, Zhang, Yu, & Bao, 2015). The underlying processes may involve social modeling, peer pressure, and various types of reinforcement (Dishion & Tipsord, 2011; Zhang, Chen, Liu, Deng, & Fang, 2012).

In addition, negative school climate perceptions may lead adolescents to affiliate with deviant peers. In schools with negative climates, adolescents are more likely to feel being rejected and isolated, which may prompt them to turn to deviant peers for acceptance and recognition (Dishion, Patterson, Stoolmiller, & Skinner, 1991; Rudasill, Niehaus, Crockett, & Rakes, 2014). Also, adolescents who perceive negative school climate usually have a weak bond to their schools, which makes them less likely to feel guilt when they commit non-conventional/delinquent behaviors with deviant peers. In addition, schools with negative climates have more problematic students than those with positive climates, which leave higher risk for students to interact with deviant peers (Reinke & Herman, 2002). Consistent with these theoretical notions, Hadley-Ives, Stiffman, Elze, Johnson, and Dore (2000) found that negative perceptions of school climate were associated with more deviant peer affiliation. Nevertheless, to our knowledge, no research to date has examined the mediating role of deviant peer affiliation in the relation between perceived school climate and adolescent Internet addiction.

#### 1.2. The moderating role of effortful control

Although negative school climate is generally considered as a risk factor for adolescent Internet addiction, adolescents are differently susceptible to environmental risk. Therefore, it is important to examine moderators of perceived school climate as it impacts adolescent Internet addiction. The present study tests a hypothesis that the indirect association between perceived school climate and Internet addiction will be moderated by adolescent effortful control.

Effortful control is the volitional aspect of self-regulation. It is defined as the ability to activate a subdominant response and/or inhibit a dominant response by voluntarily modifying one's own attention and behavior (Rothbart & Bates, 2006). Individuals with high levels of effortful control show better emotion regulation,

moral development, and adjustment in general (Eisenberg, Smith, & Spinrad, 2011) and lower levels of Internet addiction in particular (Li, Dang, Zhang, Zhang, & Guo, 2014; Li, Chen, Li, & Li, 2014; Özdemir, Kuzucu, & Ak, 2014; Zhang, Li, & Li, 2015; Zhou, Yuan, Yao, Li, & Cheng, 2010). For example, Li, Zhang, Li, Zhen, and Wang (2010) found that effortful control negatively predicted Chinese adolescents' Internet addiction.

The risk-buffering hypothesis proposes that favorable individual characteristics such as effortful control can attenuate the relation between environmental risk factors and problem behaviors (Luthar Crossman, & Small, 2015). Empirical studies have supported this hypothesis. For instance, Lengua, Bush, Long, Kovacs, and Trancik (2008) found that effortful control moderated the relationship between socioeconomic, maternal, and environmental risk factors and adolescent externalizing and internalizing behaviors, such that these risk factors were associated with increased maladjustment for individuals with low effortful control, but not for those high effortful control adolescents. Likewise, Gardner, Dishion, and Connell (2008) found that self-control (a construct similar to effortful control) moderated the relationship between deviant peer affiliation and adolescent externalizing behaviors, such that adolescents with higher self-control were less likely to be affected by deviant peer affiliation. To our knowledge, no previous research has examined whether effortful control is a protective factor that buffers the adverse impact of perceived school climate on adolescent Internet addiction.

#### 1.3. The present study

Taken together, the purposes of the present study were twofold. First, this study examined whether deviant peer affiliation would mediate the link between perceived negative school climate and adolescent Internet addiction. Second, this study examined whether the indirect relationship between perceived school climate and Internet addiction through deviant peer affiliation would be moderated by adolescent effortful control. These two research questions form a moderated mediation model, which can address both mediation (i.e., how does perceived school climate lead to Internet addiction) and moderation (i.e., when is the risk most potent) mechanisms underlying the relationship between perceived school climate and adolescent Internet addiction. Fig. 1 illustrates the conceptual model. Based on the literature review, the present study proposed the following hypotheses:

**Hypothesis 1.** Perceived school climate would be indirectly related to adolescent Internet addiction through deviant peer affiliation.

**Hypothesis 2.** Adolescent effortful control would moderate the indirect association between perceived school climate and Internet addiction via deviant peer affiliation. Specifically, the indirect association between perceived school climate and Internet addiction would be much weaker for adolescents with higher levels of effortful control.

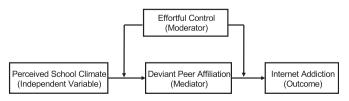


Fig. 1. The proposed moderated mediation model.

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