The benefits and dangers of flow experience in high school students' internet usage: The role of parental support

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ABSTRACT

Flow has been identified as a desirable phenomenon because it can lead to a favorable attitude toward specific information technologies. In the present study, we argue that it can also result in potential adverse consequences such as Internet addiction. Based on the flow theory, the present study examines the dual effects of flow experience on high school students' Internet addiction and exploratory behavior. The present study also examines the effects of parental interventions on the dual causal processes. A research model was developed and empirically tested on data collected from 1203 high school students in central China. The structural equation modeling analysis demonstrates that flow experience has positive impacts on both high school students' Internet addiction and exploratory behavior. In addition, parental support significantly lessens high school students' Internet addiction and enhances their exploratory behavior. Theoretical and practical implications are also discussed.

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1. Introduction

Adolescent Internet use is growing exponentially in the last decade (Watters, Keefer, Kloosterman, Summerfeldt, & Parker, 2013). According to a survey report from China Internet Network Information Center (CNNIC), by the end of 2012, the number of Chinese adolescent Internet users had already exceeded 235 million, accounting for 66.4% of Chinese adolescents in general (CNNIC., 2013). Among these adolescent Internet users, over 50% were high school students (Zhao, Lu, Huang, & Wang, 2010). Despite the increasing pervasiveness of Internet use in adolescents' lives, research on the nature of adolescents' Internet use has not kept up, especially for high school students from 12 to 18 years old. Indeed, there is remarkably little research exploring the delusory and dual outcomes of high school students' flow experiences in their Internet usage.

In academics, flow has been identified as an optimal experience that can lead to a favorable attitude toward a brand or organization (Jiang & Benbasat, 2004), longer visits to a website (Koufaris, 2002), willingness to adopt specific Information systems (IS) (Zhou, 2013), and increased learning performance and positive affects (Esteban-Millat, Martínez-López, Huertas-García, Meseguer, &

Rodríguez-Ardura, 2014). As such, much research has called for ways to enhance users' flow experience as a means to achieve a positive outcome. In the present study, we follow the spirit of the extant work and propose that high school students' flow experience can indeed be a positive factor that drives their exploratory behavior, which is typically a desirable outcome (Novak, Hoffman, & Yung, 2000; Zhao, Lu, Wang, & Huang, 2011). However, we argue and empirically show that the influence of flow experience on high school students' Internet use can be harmful as well. That is, high school students' flow experience can also lead to Internet addiction, which is a problematic dependency on the Internet. Excessive use of and addiction to the Internet may result in many negative psychological and physical damages, and these observations may be more prevalent among adolescent students (Li, Li, & Newman, 2013; Xu, Turel, & Yuan, 2012). Indeed, previous studies reveal that upwards of 30 to 59% of adolescent 12 to 18 years old score above the midpoint on Internet addiction measures (Watters et al., 2013). This paradox has thus become an issue worthy of extensive exploration.

The objective of the present study is therefore to examine the dual effects of the flow experience on high school students' Internet usage by focusing on not only its assumed positive effect but also its potential adverse consequences. In addition, previous studies demonstrate that support from social ties is negatively related to individuals' addiction-related behavior (Xu et al., 2012) but positively related to their satisfaction and engagement (Martins & Kellermanns, 2004). Therefore, in chorus with the social support

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literature, the present study also intends to examine the intervention effects of parental support on the relationships between the flow experience and the dual outcomes (Internet exploratory and addiction behaviors) in the context of high school students' Internet usage. Specifically, the present study investigates (1) *how does high school students' flow experience affects their Internet exploratory as well as Internet addiction behaviors?* (2) *What is the role of parental support on shaping high school students' Internet exploratory and Internet addiction behaviors within the flow experience?*

The present study makes several contributions. First, despite the effort devoted to studying the flow experience in recent years, there still lacks a consensus about its components (Hoffman & Novak, 2009). Based on a review of the flow literature, the present study measures the flow experience of high school students' Internet usage as a second-order construct that includes four components: enjoyment, telepresence, concentration, and time distortion. This will contribute to our understanding of the flow experience in this specific context. Second, unlike previous studies that mainly focus on the positive effects of the flow experience, this study investigates both the positive and negative impacts of the flow experience on high school students' Internet usage. Finally, this study investigates the intervention effects of parental support on high school students' Internet usage.

The rest of this paper is organized as follows. The research theoretical background and hypotheses are presented in Section 2. Next, the research methodology is discussed in Section 3, followed by the results in Section 4. The results are discussed in Section 5, along with their theoretical and practical implications in Section 6. Finally, limitations and future research are presented in Section 7.

2. Literature review

The flow experience is defined as a holistic sensation that people feel when they are totally involved in an activity (Csikszentmihalyi, 1975). The state of flow is characterized by (1) high levels of skill and control; (2) high levels of challenge and arousal; (3) focused attention; (4) intrinsic enjoyment; and (5) is enhanced by interactivity and telepresence (Hoffman & Novak, 1996; Novak et al., 2000). To experience flow while engaged in an activity, individuals must perceive a balance between the challenges and their skills, both of which must be above a critical threshold (Novak et al., 2000; Zhou, 2013).

Following its introduction by Csikszentmihalyi (1975), the concept of flow has been applied in various disciplines including psychology (Ghani & Deshpande, 1994), marketing (Mollen & Wilson, 2010; Novak et al., 2000), information systems (Koufaris, 2002; Zhou, 2013), online gaming (Weibel, Wissmath, Habegger, Steiner, & Groner, 2008) and education (Esteban-Millat, Martínez-López, Huertas-García, et al., 2014). However, due to the complex nature of the flow concept, existing research still lacks a consistent viewpoint regarding its components (Hoffman & Novak, 2009).

In general, the literature has three different measurements of the flow experience. The first point of view deems the flow experience as a unidimensional construct (Novak et al., 2000). A notable example is the work of Novak et al. (2000) which conceptualized the flow experience as a single dimensional construct with three items. This measurement was adapted into different contexts including online gaming and online shopping. The second viewpoint regards flow experience as a multidimensional concept (Koufaris, 2002). For instance, Koufaris (2002) measured the flow experience as a multidimensional variable which included three dimensions (enjoyment, attention focus, and perceived control) in his online consumer behavior model. This measurement has been widely adapted in research focusing on the online channel

(Jiang & Benbasat, 2004). The third point of view regards the flow experience as a second-order factor (Guo & Poole, 2009; Hausman & Siekpe, 2009; Zhou, 2013). For instance, Hausman and Siekpe (2009) conceptualized the flow experience using four factors: perceived control, attention, interest, and curiosity. Guo and Poole (2009) measured the flow experience by including six dimensions: concentration, perceived control, transformation of time, mergence of action and awareness, transcendence of self, and autotelic experience. Lee and Chen (2010) examined four dimensions of the flow experience (enjoyment, concentration, telepresence, and time distortion). More recently, Zhou (2013) noted that the flow experience includes three factors: enjoyment, perceived control, and attention focus. Based on an extensive review of the flow literature, the extant research has found that enjoyment, concentration/attention focus, telepresence, and time distortion represent the frequently used components of the flow experience (Esteban-Millat, Martínez-López, Huertas-García, et al., 2014; Lee & Chen, 2010; Zhou, 2013). Therefore, following the previous studies, these four factors were used to measure the flow experience in the present study.

The flow literature has mostly assumed that the flow experience is an optimal experience that can result in a favorable attitude toward a specific information technology (IT) (Esteban-Millat, Martínez-López, Luna, & Rodríguez-Ardura, 2014; Zhou, 2013). However, is the flow experience always a desirable positive outcome? A number of studies have suggested that unhealthy overuse of technology can be problematic and may have negative consequences (Chou & Ting, 2003; Turel, Serenko, & Giles, 2011). Thus, there is a need for researchers to examine whether the flow experience can also lead to negative outcomes and how such addictive behavior can be intervened and reduced back to healthy levels.

3. Research model and hypotheses

Drawing on the flow theory and prior research related to Internet usage, the present study proposes a research model that reflects the dual effects of the flow experience on high school students' Internet usage. As shown in Fig. 1, the flow experience has positive effects on both high school students' pathological (Internet addiction) and non-pathological (Internet exploratory) usage behavior. Parental support positively affects high school students' Internet exploratory behavior and negatively affects their Internet addiction behavior. In addition, parental support will positively moderate the relationship between high school students' flow experience and Internet exploratory behavior, and will negatively moderate the relationship between high school students' flow experience and Internet addiction behavior. Theoretical justifications of the hypotheses are as follows.

3.1. Flow experience and Internet addiction

Internet addition, a type of behavioral addiction, is defined as a pathological problematic state of human beings who have a maladaptive preoccupation with, and excessive impulsive use of the Internet (Wang & Wang, 2013; Watters et al., 2013). Even though Internet addiction is receiving increasing attention from researchers and counselors, the scope of this concept has not been well defined, and various terms have been used to portray this phenomenon including pathological Internet use (Mai et al., 2012), Internet addiction disorder (Yang & Tung, 2007), and compulsive Internet use (Meerkerk, van den Eijnden, Franken, & Garretsen, 2010). Consequently, many different measurements of Internet addiction have also been proposed (Douglas et al., 2008; Griffiths, 1998; Mai et al., 2012; Weinstein & Lejoyeux, 2010; Young, 1998a, 1998b). For instance, Griffiths (1998) regarded Internet addiction