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Research Report

Media multitasking and psychological wellbeing in Chinese adolescents: Time management as a moderator

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ABSTRACT

The present study examined the relationships among media multitasking, time management, and psychological wellbeing in Chinese adolescents. A total of 320 adolescents aged 11 to 18 years old were recruited and asked to complete the Media Use Questionnaire, Chinese Adolescent Mental Health Inventory, and Adolescent Time Management Disposition scale. A structural equation model was used to assess possible relationships among media multitasking, time management, and psychological wellbeing. The results showed that the media multitasking index of the sample was 2.5, indicating that adolescents also had access to other 2.5 media tasks when performing the primary media task. Media multitasking was significantly negatively correlated with psychological wellbeing. Time management disposition was negatively correlated with Media multitasking and positively correlated with psychological wellbeing. Our findings indicate that time management disposition can moderate the relationship between Media multitasking and psychological wellbeing. The theoretical and practical implications of adolescent media use are discussed.

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1. Introduction

The simultaneous use of one or more digital devices is referred to as media multitasking (Foehr, 2006; Roberts & Foehr, 2008) and is becoming ubiquitous among young people (Carrier, Cheever, Rosen, Benitez, & Chang, 2009; Jeong & Fishbein, 2007). Moreno et al. (2012) found that more than half of the time university students were using the internet they were multitasking. Given this rapidly changing media environment, it is vital to conduct empirical studies to understand how this new digital climate is influencing youth. However, there is no research into Chinese young users' media multitasking behavior. As an important period between childhood and adulthood, adolescence is characterized by alterations in physical, psychological, and social development (Ernst, Pine, & Hardin, 2006). The presence of relatively immature cognitive control (Casey, Tottenham, Liston, & Durston, 2005) makes this period a time of vulnerability and adjustment (Steinberg, 2005), making adolescents worthy of special consideration. The aim of the present study was to examine media multitasking and its relationship with psychological wellbeing among Chinese adolescents and to explore what factors influence this relationship.

1.1. Media multitasking and adolescent development

There is mounting evidence that digital media multitasking can have a range of negative impacts on task performance and learning. Participants in a number of studies took more time to complete tasks performed concurrently than when they were performed sequentially (Pashler, 2000; Rubinstein, Meyer, & Evans, 2001). Accuracy and overall performance can also suffer during multitasking (Adler & Benbunan-Fich, 2012; Ophir, Nass, & Wagner, 2009). Using phones or laptops in the classroom (Fried, 2008; Junco, 2012a) and during lectures (Aguilar-Roca, Williams, & O'Dowd, 2012; Hembrooke & Gay, 2003) have negative impacts on the learning outcomes of both media users and students seated nearby (Sana, Weston, & Cepeda, 2013; Wood et al., 2012). A series of recent studies have highlighted the negative impacts of high levels of social media use on academic engagement and performance (Junco, 2012b; Junco & Cotten, 2012; Kirschner & Karpinski, 2010). Multitasking appears to inhibit the transfer of information into both short- and long-term memory (Edwards & Gronlund, 1998), and functional magnetic resonance imaging (fMRI) studies indicate that multitasking shifts activity from the hippocampus to the striatum. These structures associated with explicit/declarative and procedural memory, respectively, and a shift to the latter is clearly not conducive to deeper learning (Foerde, Knowlton, & Poldrack, 2006).

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To examine the influence of chronic heavy multitasking on cognitive control, Ophir et al. (2009) developed the media multitasking index (MMI) to evaluate self-reported media multitasking across a variety of different media. They reported that college students who were heavy media multitaskers (HMMs) performed much more poorly than light media multitaskers (LMMs) in three key aspects of cognitive functioning: filtering, working memory management, and task switching. Positive correlations between levels of media multitasking and self-reports of attentional failures, as well as spontaneous and deliberate mind wandering, were observed (Ralph, Thomson, Cheyne, & Smilek, 2013). The results showed that frequent task switching occurred in HMM groups, and their performances were far below that of LMM groups (Song, Nam, Kim, & Lim, 2013).

Many of the studies mentioned above concerned the impacts of media multitasking on learning and cognition, and most of them were conducted in college students. However, we have a limited understanding of chronic heavy multitasking on children's wellbeing. Adolescents must deal with developmental challenges to establish interpersonal connections, construct self-identity, develop abstract thinking, learn to regulate emotion, and adapt to their environments. Only a few studies have examined the relationship between media multitasking and social wellbeing. Just one group investigated the effect of media multitasking on children's wellbeing, and their sample was limited to female subjects. Pea et al. (2012) found that media multitasking was associated with a series of negative socioemotional outcomes in 8- to 12-year-old girls (e.g., feeling less social success, not feeling normal, having more friends whom parents perceive as bad influences, and sleeping less). For college students, media multitasking was a unique predictor of both depression and social anxiety after controlling for personality traits and overall media use (Alzahabi & Becker, 2013; Yang & Zhu, 2014). However, a Survey of the Previous Day (SPD) instrument in which participants were asked to recall what they did during each hour of the previous day revealed no significant relationship between media multitasking measures and wellbeing (Shih, 2013). Collectively, these studies demonstrate that the relationship between media multitasking and wellbeing is not well understood.

1.2. Time management, media multitasking, and wellbeing

Previous studies have investigated some factors that could increase the likelihood that an individual will multitask. Psychological variables such as sensation seeking (Foehr, 2006; Jeong & Fishbein, 2007) and impulsivity (Minear, Brasher, McCurdy, Lewis, & Younggren, 2013) are positively correlated with multitasking. Executive attention is central to multitasking because the information and goals relevant to one task must be actively maintained while other tasks are performed. However, Ophir et al. (2009) found that HMMs performed much more poorly than LMMs in executive function tasks. In other words, individuals who most frequently multitask may be those who are the least cognitively equipped to effectively carry out multiple tasks simultaneously. Therefore, variables related with self-regulation may negatively correlate with media multitasking.

Time management is conceptualized as an important aspect of behavior for self-regulation, which involves setting goals, prioritizing, time estimation, problem solving, evaluation, and observing patterns and trends in behavior (Pintrich, 2000, 2004). Huang and Zhang (2001) proposed the concept of time management disposition, which is a multilevel and multidimensional construct comprised of three dimensions: time value, time monitor, and time efficacy. These factors reflect self-control and self-efficacy with regard to time use.

Numerous studies have shown that time management is positively correlated with wellbeing (Kaufman-Scarborough & Lindquist, 1999) and job satisfaction (Adams & Jex, 1999), but negatively associated with depression, anxiety (Misra & McKean, 2000) and tension (Macan, Shahani, Dipboye, & Phillips, 1990). Moderate effects of time management for organizing behaviors has been demonstrated with regard to the relationship of work demands and autonomy on job burnout (Peeters & Rutte, 2005) and for stressors and strains (Jex & Elacqua, 1999).

Based on theoretical and practical studies into time management, we expected a positive association of time management with wellbeing and a negative correlation with media multitasking. If an individual has a good plan of what to do, they may be not be distracted by other media activities. In addition, time management could buffer the negative effect of media multitasking on wellbeing.

2. Method

2.1. Participants

We recruited 320 high school students (grades 7–11) from 10 classes of 2 schools in Beijing. One experimenter and the class advisers released the questionnaires to the participants. Each subject received stationery as compensation for participating in the study. Ten participants were excluded because their questionnaire responses were deemed not serious. Among the 310 remaining participants, there were 157 boys and 153 girls, whose age ranged from 11 to 18, with a mean age of 15.3 (standard deviation [SD] = 1.4).

2.2. Measures

2.2.1. Media Use Questionnaire

The Chinese version (Yang & Zhu, 2014) of the Media Use Questionnaire developed by Ophir et al. (2009) was used. The questionnaire assesses the time spent using eight different types of media tasks while participating in face-to-face communication and doing homework. The eight different forms of media tasks include print media, texting, instant messaging, or emailing, using social network sites (SNS), using non-social text-oriented sites, talking on the telephone or video chatting, listening to music, watching TV and movies, and playing video or online games. Respondents were asked to report the total number of hours they spent using each medium on an average day. In addition, they indicated the extent to which they used each of the other types of media while engaging with each primary medium by responding most of the time, some of the time, a little of the time, or never.

An index of media multitasking (MMI) was derived from the responses to the Media Use Questionnaire using the following formula developed by Ophir et al. (2009):

$$MMI = \sum_{i=1}^{i=10} \frac{m_i \times h_i}{h_{total}}$$

In the formula, h_i is the number of hours per day reportedly spent using the primary medium i , and h_{total} is the total number of hours per day spent with all primary media. m_i was based on participants' estimations of time spent on other media activities while engaged with a primary medium. Numeric values were assigned to participants' estimations as follows: 1, most of the time; 0.67, some of the time; 0.33, a little of the time; and 0, never. The sum of the estimated activities was m_i . To account for the amount of time spent engaging in the primary medium or activity, the MMI is adjusted by dividing the sum of the activity by h_{total} .

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