University students' Motivated Attention and use of regulation strategies on social media

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ABSTRACT

The Internet has become a major platform for learning in higher education. Besides rich informational resources, however, the Internet offers an abundance of distractors that challenge students' attention. This study investigated university students' perceived attention state and use of regulatory strategies using the Online Learning Motivated Attention and Regulatory Strategies scale (OL-MARS). Participants were 230 undergraduate and graduate students recruited from two universities located in central and northern Taiwan. The exploratory factor analysis revealed four subscales in the OL-MARS, including perceived attention discontinuity, social media notification, behavioral strategies, and mental strategies. Results showed that mental and behavioral strategies were positively associated with criterion variables, including Internet self-efficacy, online search strategies, and final course grades, but negatively correlated with time spent on the Internet and social media. Whereas, perceived attention discontinuity and social media notification mostly had a modest correlational relationship with these validating variables in an opposite direction. Cluster analysis identified five types of profiles: the Motivated Strategic, the Unaware, the Hanging On, the Non-Responsive and the Self-Disciplined. Group membership exhibited mean differences in Internet self-efficacy, online search strategies, final course grades, and time spent on the Internet and social media. The study results validated the constructs in meta-attention for theory development, provided the OL-MARS scale as an effective meta-attention measurement tool to assess university students' knowledge of attention and regulation of attention, and proposed the specific intervention and attention regulation training for each profile group.

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1. Introduction

The Internet has become a major source of information and the essential platform for learning in this digital era (National Center for Education Statistics, 2006). According to Allen and Seaman (2008), nearly 100% of college students reported using the Internet for academic purposes. Learning on the Internet (e.g., from basic information searches to MOOCs [massive open online courses]) seems to have become a daily routine and an integrated part of studying as a way to increase accessibility of education and to reduce the cost of higher education. Rosen (2010) suggested to meld social network-based learning to increase the motivation and effectiveness in learning for students who grow up with

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technology. Indeed, Dabbagh and Kitsantas (2012) proposed a Personal Learning Environment (PLE) premised on social media in conjunction with self-regulatory learning theory for formal and informal learning. They regarded PLE as a learning-on-demand lifestyle in which students can collaborate, share, create, and make meaning of their learning through cloud-computing technology. Compared with the traditional institutional learning management systems (LMS), where instructors carefully manage and monitor students' learning (Dabbagh & Kitsantas, 2012), a PLE features learner control, open resources, and sustainability. A PLE is relatively open environment where students can take an active and self-directed role to communicate and collaborate with people of different interests and prior knowledge and to access the enormous amount of information on the Internet. In addition to learner control and open resources, a PLE facilitates flexible interaction among individuals, technologies, communities, and resources (Wilson, 2008), which can last and grow with the learners' interest and motivation, while a LMS is course-centric and usually ends with the semester. However, besides rich informational resources from social media that are helpful for students' learning, the Internet offers an abundance of information and communication technology (ICT) resources such as instant messaging, texting, and social network sites (Fox, Rosen, & Crawford, 2009; Jacobsen & Forste, 2011; Junco, 2012; Junco & Cotten, 2012), not to mention entertainment such as movies and games (Ko, Yen, Chen, Chen, & Yen, 2005; Liu & Peng, 2009; Yee, 2006), that challenge students' control of their attention and behavior. In fact, failure to maintain focused attention has become a major problem among university students. For example, in a survey of 1774 college students in America, Junco and Cotten (2012) found that 51%, 33%, and 21% of the participants reported texting, using Facebook, and emailing, respectively, when doing schoolwork. In another study, the rate of diverting attention away from the primary task at hand to another task with the computer was even higher, 85.9% among U.S. university students and 72.5% among European students (Karpinski, Kirschner, Ozer, Mellott, & Ochwo, 2013). Not surprisingly, studying while using social media or searching for information irrelevant to the schoolwork was negatively related with overall grade point average by analyzing data from a large-sample web survey (Junco & Cotten, 2012) or from direct observations at home (Rosen, Carrier, & Cheever, 2013). Moreover, studying while doing other tasks was at the cost of negative emotions (e.g., stress and frustration) (Mark, Gudith, & Klocke, 2008) and lack of efficiency (Bowman, Levine, Waite, & Gendron, 2010). Understanding how students perceive, act, and react in the face of the numerous attractions and distractors that are irrelevant to their learning on the Internet has important implications for instructional practices and interventions. Carrier, Rosen, Cheever, and Lim (2015) suggested to apply "digital metacognition" in learning so that students understand when to focus on the online learning task and when to stop the distractions; the authors regarded digital metacognition as an important factor in managing one's learning with the online platform.

Therefore, the aim of this study was twofold: (1) to investigate university students' awareness of their attention and strategy use in online learning through the development of the Online Learning Motivated Attention and Regulatory Strategies scale (OL-MARS) and (2) to explore the online learning typology among university students using the OL-MARS constructs to determine how different profiles of students adapt to online learning. In terms of online learning, we focused on all the types of learning or information reading activities that university students may perform on the Internet. The types of learning activities may include reading instructor-assigned materials online, joining a discussion and collaborating for schoolwork online, and watching an online instructional video. Information reading activities may include reading online news and reading/searching for practical information or relevant information for a school project.

The research questions for the study were as follows:

1. What are the components and constructs of OL-MARS based on the theory of meta-attention?
2. What are the typological profiles based on the OL-MARS constructs?
3. What is the grouping effect based on OL-MARS profiles on university students' Internet self-efficacy, online search strategies, and academic achievement as well as time spent on the Internet and social media?

2. Theoretical framework

The current study drew on the theories of meta-attention (Loper & Hallahan, 1982; Reisberg & McLean, 1985), attention (Petersen & Posner, 2012; Posner & Boies, 1971; Posner & Petersen, 1990) and metacognition (Flavell, 1979; Schraw & Moshman, 1995) to investigate university students' awareness of their attention and strategy use when engaged in online learning. Below we introduce the theory of attention and meta-attention and describe the components of meta-attention compared to metacognition.

2.1. Theory of attention and meta-attention

The main function of attention is to select information for further processing while inhibiting other information from being processed (Pashler, 1998). Attention is interrelated with, but separate from, cognitive processing (Posner & Petersen, 1990). From the perspective of information processing, before engaging in cognitive activities, learners go through a stage of attention, which consists of three subsystems: the orienting, detecting/executive, and alerting systems (Petersen & Posner, 2012; Posner & Boies, 1971; Posner & Petersen, 1990).