Flow experience in computer game playing among Thai university students

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ARTICLE INFO	ABSTRACT
	This study was based on the flow theory of Mihaly Csikszentmihalyi. A cross sectional study was performed to examine flow experience in computer game playing among university students and to identify behavior that led to positive consequences and addictive behavior. Multi-stage sampling was conducted to select a sample of 478 university students aged 18–24 years who usually played computer games. Data were collected using the assessment instruments of computer game addictive behavior and perception of the consequences from game playing. Based on exploratory factor analysis, the construct of flow experience could be divided into two dimensions: 1) cognitive flow which was composed of challenge-skill balance, clear goals, and unambiguous feedback, and 2) emotional flow which was composed of action-awareness merging, concentration on the task at hand, sense of control, loss of consciousness, and time transformation. Based on structural equation modeling, cognitive flow was positively correlated to perception of utility from the game (β = .85) and emotional flow was positively correlated to physical and psychological impacts from the game (β = .52). Moreover, males were more likely to spend time on computer games than females. This study found that time duration was not a key indicator of game-playing consequences. However, the state of flow in computer game playing was indeed a key factor that could perpetrate positive or negative outcomes. The findings of this study suggested that flow experience in computer game playing has both benefits and drawbacks. It is recommended that youth-related organizations should promote cognitive flow experiences to develop the self-improvement of computer game players rather than emotional flow experiences. © 2018 Kasetsart University. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Introduction

Computer and technology advancements have been influencing everyday lives through communication, education, and recreation. It has been reported by the National Statistical Office that in Thailand, there are 22.2 million computer users with 18.3 million Internet surfers in 2013 (Electronic Transactions Development Agency, 2013). The age groups of users who mostly spend time online using entertainment and games has been analyzed and it is estimated that 2.5 million Thai children had game addiction problems increasing from 13.3 percent in 2002 to 14.4 percent in 2012 (National Health Commission Office of Thailand, 2012). This situation is widespread. It has been demonstrated that American children and adolescents spent 20 h a week on computer games (Anderson et al., 2010). In Australia, 90–94 percent of 6–25 year olds played computer games daily (Brand, 2012). In China, 10.3

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percent of children and adolescents have become game addicted (Peng & Li, 2009). In South Korea, a death was reportedly caused by acute heart failure due to 80 h of continuous playing online games (Lee, 2004). Some kinds of computer games can lead to aggressive behavior and diminished empathy and altruism (Johnson & Scholes, 2013; Krahe & Moller, 2010). Game addiction is displayed by several types of behavior; obsessing on a game, demanding spending time on games daily, increasing desire, and anger from being obstructed. These behavioral types affect routine life and physical and mental health. Children can use the gaming to escape from unpleasant truths and to compensate for their perceived disabilities and non-acceptance of their real life. The fact is that game addiction is somehow similar to drug addiction even if there is no chemical intake (Hongsangaunsri & Kateman, 2013; Kuss & Griffiths, 2012).

Accordingly, there is huge interest in dealing with game addiction problems. Myriad research studies have endeavored to create alleviation, identify preventative action, and find solutions. In particular, children and adolescents are exposed to online gaming via several gadgets or even through internet cafe access in the community (Usman & Inam, 2013).

Previous research mostly aimed at identifying the cause and effect of game addictive behavior. Earlier findings demonstrated mostly negative consequences were associated with negative perspectives of the people toward game playing (Connolly, Boyle, MacArthur, Hainey, & Boyle, 2012; Paul & Willoughby, 2012). It seemed that state organizations emphasized initiating legislation and regulations to handle game addiction problems in children and adolescents. However, these regulations have been called into question, with critics arguing that people should be allowed freedom of choice. Furthermore, the fact that games have been invented to make children happy in the first place is equally important as the fact that playing games at home is safer than committing harmful acts in the broader community (Usman & Inam, 2013). It has also been recognized that some negative consequences of game addiction might be the impacts of predisposed factors, such as social and economic differences, capitalism, poverty, and domestic violence (Johnson & Scholes, 2013; Nielsen & Smith, 2003). On the other hand, playing games can develop intelligence, and help with critical thinking, decision-making, problem-solving, creativity, self-esteem, altruism, and a feeling of liberty (Nielsen & Smith, 2003; Paul & Willoughby, 2012; Przybylski, Ryan, & Rigby, 2009). This has resulted in a myriad of studies focusing on positive consequences (Johnson & Scholes, 2013). Thus, instead of concentrating on the negative side of some computer games, the challenge is to re-design a game to teach and develop positive characteristics; creativity, self-esteem, problem-solving flexibility, problem management, and emotional control in children and adolescents (Adachi & Willoughby, 2012). Associations have been identified between computer game playing and positive variables in previous studies that suggest game playing could lead to several psychological strengths (Johnson & Scholes, 2013; Przybylski et al., 2009; Russoniello, O'Brien, & Parks, 2009). However, it is not always clear at

what stage playing games can lead to proper and constructive behavior (Boyle, Connolly, Hainey, & Boyle, 2012). Given that computer games offer fun and enjoyment leading to repetitive behavior and addiction, it is necessary to examine the optimal levels of game playing resulting in good conditions and non addiction (Johnson & Scholes, 2013; Yuksel, 2012).

Flow theory has been considered as a comprehensive theory to explain both sides of the impact from computer game playing because the state of flow refers to what happens when children are playing computer games that involve enjoyment, challenging, reacting, active thinking, feeling, and behaving (Voiskounsky, 2010).

Flow theory was developed by Mihaly Csikszentmahalyi, and describes a state of concentration or complete absorption with the activity at hand and the situation (Csikszentmihalyi, 1997). The flow state is an optimal state of intrinsic motivation, where the person is fully immersed in what he or she is doing. However, too much involvement in flow by being over absorbed and engaged for example, can harm children, since they might obsess with the state of enjoyment but ignore self-care and interpersonal relationships (Chiang, Lin, Cheng, & Liu, 2011). Therefore, flow is considered as the state leading to either positive or negative consequences in computer game playing.

Research Objectives

This research examined the structure of flow experience in the context of computer game playing and explored how the state of computer game playing can cause constructive and addictive behavior through the theory of flow. The components of flow were further examined to determine the impacts (positive or negative behavior) while playing computer games.

Previous Studies and Theory

There has been huge interest in studying this phenomenon regarding its aspects, causes and effects, and other factors that may be positively or negatively related. Earlier research attempted to apply several approaches to explain game addictive behavior. The medical biology concept focused on the cell level, the brain and neurological system, and neurotransmitters, which were associated with addictive behavior (Chou et al., 2013; Hoeft, Watson, Kesler, Bettinger, & Reiss, 2008). Behaviorism, explained that external stimulation or reinforcement could increase computer game playing without the consideration of intrinsic motivation (Beranuy, Carbonell, & Griffiths, 2013; Usman & Inam, 2013). Humanism emphasized individual factors, believing in human potential. Game addictive behavior, consequently, was a freedom of choice fulfilling basic needs, such as physical needs, love and belonging, acceptance, and identity (Hellstrom, 2012; Johnson & Scholes, 2013; Kuss, Louws, & Wiers, 2012). The cognitive concept explored human thought, self-control, and expectation towards computer game playing. However, it was believed that game playing was not because of losing self-control but that an individual might intentionally ignore anything else and feel integrated with the game only