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How do construal levels affect the intertemporal choices of Internet addicts?

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ABSTRACT

Although various studies have shown that construal levels affect intertemporal choices, how this specifically occurs in individuals with Internet addiction remains unknown. We aimed to examine how do construal levels affect the intertemporal choices of Internet addicts. This study employed a 2 × 2 experimental design to explore this issue in greater depth, with 55 Internet addicts and 55 healthy controls that were well matched in age and gender. Each participant experienced one of two construal level priming conditions (high versus low) before completing an intertemporal decision-making task. The results of the experiment revealed that construal level had an effect on the intertemporal choices of Internet addicts as well as healthy controls. However, the subjective values of the intertemporal choices of participants with Internet addiction were significantly lower. Additionally, the subjective values of intertemporal choices were significantly higher among participants who had been primed to have a high construal (i.e., more abstract) mindset as opposed to a low construal (i.e., more concrete) one. This result further affirmed the influence of construal level on intertemporal choice, regardless of whether individuals were addicted to the Internet. Although Internet addicts discounted delayed gains more steeply than did normal Internet users, both exhibited shortsightedness in the low construal level priming condition. These results suggest that Internet addicts as well as normal users are more long-sighted in high construal level priming condition. Implications of the current findings for long-term benefit planning or goal setting and the development of effective interventions are discussed.

Which do you prefer, an immediate $100 or waiting an extra month for $110? Most individuals, if not everyone, would choose the former. In daily life, we would encounter a great many similar decisions involving intertemporal tradeoffs. Intertemporal choice refers to the decisional process of weighing the potential costs and benefits of various options across different time points (Ainslie, 1975; Loewenstein, 1988). Economists and psychologists have researched this process extensively and formulated a variety of experimental paradigms, including delay-discounting tasks (Kirby, Petry, & Bickel, 1999; Li, Li, & Liu, 2011; Myerson & Green, 1995; Trope & Liberman, 2010) and the corrected dynamic delay discounting paradigm (Richards, Zhang, Mitchell, & Wit, 1999). To index impulsivity in intertemporal decision making, both subjective values and delay discounting rates, which can be converted into each other, have been frequently devised in past literature (Kirby et al., 1999; Li et al., 2011; Myerson & Green, 1995; Richards et al., 1999).

People tend to give less weight to future benefits (or losses) than to recent ones (Green & Myerson, 2004). Numerous studies have found that people often prefer to receive an immediate smaller benefit rather than a delayed larger one (O'Donoghue & Rabin, 1999; Thaler, 1981). Research on individuals suffering from overeating disorders (Rasmussen, Lawyer, & Reilly, 2010) or addictions, including drug (Johnson et al., 2010; Kirby et al., 1999), smoking (Ohmura, Takahashi, & Kitamura, 2005), gambling (Alessi & Petry, 2003) and Internet (Saville, Gisbert, Kopp, & Telesco, 2010) addiction, has shown that they all tend to be more shortsighted than normal, healthy individuals, demonstrating excessive delay discounting rates or small subjective values (MacKillop et al., 2011). These individuals with behavioral abnormalities are more prone to choose immediately available, though smaller benefits over larger, though distant ones (e.g., those that contribute to health or

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strengthen family and social relationships).

Previous studies have noted a wide range of influential factors in the processing of intertemporal choice. For instance, Peters and Büchel (2010) concluded that there were three prominent aspects affecting individuals' intertemporal decision making, namely decision object attributes, decision makers' internal/external states and cognitive properties, and the background or historical context of decision making. In particular, decision makers' cognitive properties, such as their future expectation abilities (Peters & Büchel, 2010) and time perceptions (Benoit, Gilbert, & Burgess, 2011), had a significant effect on their decisions. Moreover, construal level, which is documented as a purely cognitive orientation (Dhar & Kim, 2007), has also been known to influence intertemporal decision making (Chen & He, 2011; Liberman & Trope, 2003).

People often predict outcomes, evaluate choices, and make decisions while taking temporal distance into consideration. Loewenstein (1996) adopted construal level theory to interpret the psychological recognition mechanism of intertemporal decision making, maintaining that the value related to high-level construal would increase with a delay in time, regardless of the valence (positive or negative) or type (emotional or cognitive) of events. On the contrary, the value related to low-level construal would decrease with a delay in time, which was known as the temporal delay discounting phenomenon (Trope & Liberman, 2003). From the perspective of social cognition, individuals' different psychological representations of the same event engender different reactions, forming the core concept of construal level theory (Liberman, Sagristano, & Trope, 2002; Nussbaum, Trope, & Liberman, 2003). A series of studies performed on the construal level theory has indicated that both decision making and evaluations are dependent on the psychological distance between a target outcome and its psychological representation (Liberman et al., 2002; Liberman & Trope, 1998; Liberman, Trope, & Stephan, 2007; Trope & Liberman, 2003). Taken together, people's representation or construal of target objects varies in levels. Furthermore, the construal level, which influences judgment and decision making, is determined by individuals' psychological distance.

In order to better understand the construal level theory and intertemporal choice, past researchers have paid lots of attention to the definition of construal manipulation. In some studies, construal level was manipulated via desirability (involving higher construal) and feasibility (involving lower construal) (Fujita, Eyal, Chaiken, Trope, & Liberman, 2008; Liberman & Trope, 1998; Todorov, Goren, & Trope, 2007). Desirability referred to the valence (i.e., intrinsic attractiveness or aversiveness) of outcome of an action, and reflected superordinate thinking concerning “why to do”, while feasibility referred to subordinate thinking concerning “how to do” (Freitas, Gollwitzer, & Trope, 2004). Thus, “why to do” aspects of behavior may better reflect the meaning of target action than “how to do”. The findings of these studies also suggest that high-level construal is more schematic and abstract than low-level construal (Chen & He, 2011; Liberman & Trope, 2003).

In summary, there is strong empirical support for the systematic influence of construal level on judgment and decision making. First, people often construe events occurring far in future as being more abstract, whereas those occurring in the near future as being more concrete. Second, variations in temporal distance grant target objects differing weights in decision making. The weights or values assigned to low-level construal have been documented to decrease with time, whereas those assigned to high-level construal will increase with time.

Previous studies have demonstrated that individuals with certain addictions or impulse control disorders are less willing to wait and more likely to make shortsighted decisions than are healthy individuals (Businelle, McVay, Kendzor, & Copeland, 2010; Johnson et al., 2010; Saville et al., 2011; Stea, Hodgins, & Lambert, 2011). The widespread use of Internet has led to the rise in incidences of Internet addiction, which has become a serious mental and psychological health issue in recent years (Ko, Yen, Yen, Chen, & Chen, 2012). Individuals reporting more Internet-related problems showed greater impulsivity (Reed, Osborne, Romano, & Truzoli, 2015). However, past research on the relationship between construal level and intertemporal choice mainly focused on common and healthy people, leaving those addicted to Internet unexplored. In current study, we aimed to examine how do construal levels affect the intertemporal choices of Internet addicts and provide a theoretical support for the intervention of Internet addicts. Hence, we manipulated construal level among Internet addicts in the present study, with healthy controls serving as a point of reference.

1. Present study and hypotheses

The present study was to examine how construal level might influence the intertemporal choices of Internet addicts and normal users/healthy controls. Participants with Internet addiction were assigned to one of two conditions—either the high or the low construal level priming condition—according to their gender and degree of Internet addiction. Controls were also randomly assigned to either one of these two groups according to their gender. Each participant completed an intertemporal decision-making task after having been primed. Prior studies have shown that individuals who underwent high construal level priming possessed stronger self-control abilities than those who experienced low construal level priming (Fujita, Trope, Liberman, & Levin-Sagi, 2006; Schmeichel, Vohs, & Duke, 2011). Studies also found that self-control was negatively associated with online gaming addiction (Kim, Namkoong, Ku, & Kim, 2008; Mehroof & Griffiths, 2010). To our knowledge, Internet addicts usually hold low level of self-control and tend to make less reasonable decisions. Other evidence showed that smokers with high-level construal would promote their level of self-control relative to low-level construal (Chiou, Wu, & Chang, 2013). The self-control of Internet addicts was significantly lower than the healthy control (Li, Dang, Zhang, Zhang, & Guo, 2014; Reed et al., 2015; Özdemir, Kuzucu, & Ak, 2014;) and often make impulsive choices (Saville et al., 2011). Thus, we speculated that construal level would affect intertemporal decision making among Internet addicts as well as normal users, and proposed the following three hypotheses. First, we hypothesized that subjective value in intertemporal decision making would be significantly lower in participants with Internet addiction than in healthy controls (Hypothesis 1). Second, we hypothesized that subjective value under the high construal level priming condition would be significantly lower compared to that in the low construal level priming condition (Hypothesis 2). At last, there was no significant interaction between participant group type and construal level (Hypothesis 3).

2. Methods

2.1. Experimental design

A 2 (participant group type: participants with Internet addiction vs. healthy controls) × 2 (construal level: high vs. low) experimental design was adopted to explore how construal level might affect intertemporal decision making in individuals with Internet addiction. Participant group type and construal level were the independent variables, while subjective value in intertemporal decision making was the dependent variable.