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Effects of intuition and deliberation on escape judgment and decision-making under different complexities of crisis situations

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ABSTRACT

We present novel evidence showing that people prefer searching for an exit and avoiding smoke rather than following the crowd regardless whether with intuition or deliberation when the crisis situation was activated. Intuition leads to more obvious preferences on escape judgment and decision-making than does deliberation under unconscious priming condition. People are more cautious with decision-making than judgment across two experiments. Priming method was adopted because the same primes tend to activate different associative links for different people (Cameron et al., 2012). Across two experiments, reliable and consistent evidence shows that when facing a crisis (e.g., fire), searching for an exit and avoiding smoke are preferred by people rather than following the crowd. In Experiment 1, we demonstrated that searching for an exit and avoiding smoke were judged as more helpful than following the crowd by both intuition and deliberation regardless whether the situation is simple or complex. In Experiment 2, we found that intuition has a more significant influence on judgment and decision-making than deliberation under both simple and complex situations. Our findings contribute to the crisis literature by demonstrating that people less prefer to follow the crowd when escaping from crisis situations, and that intuition is more effective under unconscious priming condition.

1. Introduction

Judgment and decision-making are important in successfully dealing with crisis situations such as escaping a fire. However, despite its significance, research on this area is scarce. Although some theoretical works have identified a number of factors that possibly influence judgment and decision-making under crisis situations (Sayegh et al., 2004; Sweeny, 2008), experimental works conducted to follow up the theoretical perspectives are few.

In this study, we explore the effects of intuition and deliberation on escape judgment and decision-making under different complexities of crisis situations. Many previous theoretical (e.g., Dane and Pratt, 2007; Dijksterhuis and Nordgren, 2006; Evans, 2008; Kahneman, 2003) and experimental works (e.g., Acker, 2008; Dijksterhuis et al., 2006; Thorsteinson and Withrow, 2009) have explored the effects of intuition and deliberation on judgment and decision-making in other areas such as economic, but few of these works were conducted in the area of dealing with crisis situations. Crisis situations are always characterized by tremendous amounts of uncertainty, confusion, complexity, and fear (Hymowitz, 2001), decision-making process in such circumstances also differ slightly from that in daily economic situations (Gao and Li, 2015; Li and Gao, 2013; Li et al., 2013).

We also consider the complexity of crisis situations because the effects of intuition and deliberation vary under different complexities of situations (e.g., Dijksterhuis et al., 2006; Dijksterhuis and Nordgren, 2006). Kruglanski and Gigerenzer (2011) proposed that although the same rules can underlie both intuitive and deliberate judgments, accuracy depends on the match between rule and environment: the ecological rationality of the rule. According to Pabst et al. (2013), acute stress has a rapid time-dependent effect on decision-making. A few minutes also make a significant difference. In other words, the decision process would depend on the time available, and different decisions may emerge accordingly. In this study, we examine how the complexity of a crisis situation influences the effects of intuition and deliberation on escape judgment and decision-making. We expect the effects of intuition and deliberation to differ under simple and complex crisis situations.

1.1. Effects of intuition and deliberation

The scientific literature that investigated the level of severity and deliberation time has focused mainly on the influences of

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intuition and deliberation on decision-making (e.g., Kleinmuntz, 1990; Kahneman, 2011; Dijksterhuis et al., 2006; Gao and Li, 2015). Intuition is usually linked to unconscious information processing (e.g., Bargh and Chartrand, 1999; Dijksterhuis and Nordgren, 2006), which is affectively charged (e.g., Dane and Pratt, 2007; Lieberman, 2000, 2007) as well as immediate and speedy (e.g., Kahneman, 2003; Dane and Pratt, 2007). Deliberation refers to conscious information processing (e.g., Epstein, 2002; Sloman, 1996), which is precise (e.g., Dijksterhuis et al., 2006), rational, and logical (e.g., Pham, 2007). Compared with intuitive decision process, deliberate decision-making is delayed and slow (e.g., Dane and Pratt, 2009). The effectiveness of decision-making can vary based on intuition or deliberation (e.g., Dijksterhuis and Nordgren, 2006; Evans, 2008; Li et al., 2013; Li and Gao, 2013; Gao and Li, 2015). In recent years, certain studies have begun to pay attention to the suitable conditions for intuitive or deliberate decision-making and the effects of these conditions (e.g., Dane and Pratt, 2007; Hogarth, 2001; Kruglanski and Gigerenzer, 2011). Vries et al. (2008) argued that the extent to which people adopt intuition or deliberation depends on their current emotional status. When people are under extreme time pressure, they tend to rely heavily on their intuition to make a decision (De Dreu, 2003; Suri and Monroe, 2003). Therefore, intuition potentially plays an important role in the decision-making process under crisis situations (Abernathy and Hamm, 1995; Gao and Li, 2015; Kaempf et al., 1996; Klein, 1998; Li and Gao, 2013). In critical decision situations such as fire emergency, people experience both cognitive deliberations and emotional reactions during the decision process (Kleinmuntz, 1990; Miller and Toulouse, 1986; Sayegh et al., 2004). The role of intuition is critical in such decision-making processes (Agor, 1986, 1990; Blattberg and Hoch, 1990; Brockmann and Anthony, 1998; De Dreu, 2003; Suri and Monroe, 2003). Some researchers have even claimed that intuitive decision process might be the only feasible strategy in crisis situations when the decision-makers were pressed for time or when essential elements of the decision situation were difficult to quantify or interpret (Lerner et al., 2015; Polanyi, 1966; Sayegh et al., 2004). By contrast, people tend to make deliberate decisions when they have sufficient time and accurate information (Dane and Pratt, 2009; Li et al., 2013). People also tend to ponder more and thus engage in more deliberate thinking when they are in a sad mood (e.g., Clore et al., 1994, for a review; Martin and Clore, 2001; Vries et al., 2008). In certain crisis situations, people may have a few minutes or a longer stretch of time to make judgments and decisions (Hymowitz, 2001; Ring and Kaernbach, 2015). Thus, deliberation would also play an important role in escape decision-making. Time pressure is critical in determining whether people rely more on their intuition or deliberation in response to acute crisis situations. Consistent with the effects of intuition and deliberation, Pabst et al. (2013) suggested that induced rapid stress increased in norepinephrine and that the delayed increase in cortisol might exert opposing effects on decision-making under risk.

1.2. Effects of intuition and deliberation under different complexities of crisis situations

Sweeny (2008) suggested that more threatening situations are expected to promote a larger investment of time and energy in the consideration of response options and the choice of a response; on the contrary, people facing relatively nonthreatening negative situations may simply choose the response that comes first to their mind or the least effortful response. However, such situations often allow very limited period within which to decide and operate (see Sayegh et al., 2004). Much needed information for a good decision is simply unavailable. Given that the majority of crisis situations are full of uncertainty, confusion, and fear (Sayegh et al., 2004), forming a rational decision is close to impossible. Therefore, the roles of tacit knowledge and intuition are prominent (Agor, 1990; Blattberg and Hoch, 1990; Brockmann and Anthony, 1998; Kleinmuntz, 1990).

Many judgments and decisions are made by unconscious thought (Bargh, 1994; Bargh and Chartrand, 1999). Although unconscious thought is different from intuition, intuition may well be the result of extensive unconscious thought (Dijksterhuis and Nordgren, 2006). Intuitions are the summary of judgments provided unconsciously and are ready to be applied (e.g., Bargh and Chartrand, 1999; Dijksterhuis and Nordgren, 2006). According to Dijksterhuis and Nordgren (2006), intuition is based on unconscious past experience, which also possesses a large capacity similar to unconscious thought. The difference is that unconscious thought requires processing time (when one's thought is often engaged in an unrelated task) whereas intuition occurs immediately (Khatri and Ng, 2000). Thus, situations described by unconscious thought could also be applied to intuition.

The unconscious thought theory (UTT) of Dijksterhuis and colleagues demonstrated that conscious thinkers performed better in simple situations, whereas unconscious thinkers performed better in complex situations (Dijksterhuis, 2004; Dijksterhuis et al., 2006; Dijksterhuis and Nordgren, 2006). According to Dijksterhuis et al. (2006), when a situation is simple, precise and necessary information could lead to good decisions. On the contrary, when a situation is complex, unconscious thought, with its large capacity, is expected to lead to good decisions (Dijksterhuis, 2004; Dijksterhuis et al., 2006). Although their findings were based on daily investment and purchasing decisions (Acker, 2008), UTT provided significant understanding to consider the effects of intuition and deliberation on crisis judgment and decision-making. In the present study, we assume that intuition, with its large capacity, would lead to better escape choices under complex situations, whereas deliberation, with its precise information, would lead to better escape choice under simple situations.

1.3. Possible escape choices

Our literature review revealed the following features of crisis escape circumstances: (1) People show a tendency to follow other people (Keating, 1982; Xu and Li, 2015); (2) People move or attempt to move faster than others (Predtetschenski and Milinski, 1971); and (3) Alternative exits are usually overlooked or used inefficiently (Elliott and Smith, 1993; Gao and Li, 2015; Li and Gao, 2013).

Altshuler et al. (2005) conducted a study using ants and found that under normal conditions, ants confined to a cell with two symmetrically located exits tend to use both exits in approximately equal proportions to escape. However, when a repellent fluid was added to the cell, the ants tend to herd and use one exit more than the other. Helbing et al. (2000) also predicted the panic-induced symmetry breaking in emergency escape from a room with two equivalent exits.

Li and Gao (2013) and Gao and Li (2015) conducted studies on fire escape using mice. They designed a maze with two symmetrically located exits. Some mice were trained to leave the maze via one exit whereas the others were trained to leave via another exit. When the mice have learned a preferred exit after a 12-day training period, the two groups of mice were placed in the same maze under a fire emergency condition. The two groups of trained mice kept running toward their own familiar exit, but herding was observed among untrained mice in a control condition. This finding suggested that herding behavior was well documented as a prominent escape feature for both animals and humans in panic