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Individual differences in decision making: Need for cognition and need to maximize

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Much of decision research focuses on identifying common mechanisms underlying the decision processes of all decision-makers. While this work is crucial for our understanding of decision processes, not all decision-makers bring the same motives, resources and characteristics to a process. Consideration of the ways that individuals differ in their decision-making processes and outcomes can contribute to our understanding of decision processes more generally. This paper is an attempt to understand two individual difference factors, need for cognition and need to maximize, that affect decision-making on multiple levels such as the motivation to engage in intensive decision processes, amount of time and resource dedicated to decision processes, and quality of decision outcomes. I will begin by defining and deconstructing the individual difference factors separately. I will then directly compare the two factors and discuss ways to further understand the effects of these factors on decision-making processes.

Need for cognition

Cacioppo and Petty's (1982) now classic research on a concept that they call 'need for cognition,' identifies a group of people for whom engaging in complex cognitive tasks is pleasurable and intrinsically motivating. They developed a scale to determine who fit into this category with items such as "I would prefer complex to simple problems," "I prefer my life to by filled with puzzles that I must solve," and "The idea of relying on thought to make my way to the top appeals to me" (Cacioppo, Petty, Feinstein & Jarvis, 1996, pg. 253). Need for cognition is an individual differences phenomenon in that different people experience different levels of need for cognition. Those that experience positive affect while working on a complex cognitive task are considered to be high on need for cognition, where as those that experience negative affect

are low on need for cognition. It is also important to note that, while need for cognition is related to general intelligence, it is not fully explained by it (Cacioppo et al, 1996).

Need for cognition appears to be driven by an intrinsic motivational factor. There are different theories of what underlies intrinsic motivation in the literature. For example, unitary intrinsic motives theory distinguishes between drives (e.g. hunger, sex) and ego motives or intrinsic motives. According to unitary theorists, all ego motives are concerned with increasing one's sense of competence and with expectation of pleasure. People are motivated to engage in activities that they expect to experience as pleasurable and that they believe will make them feel competent (Reiss, 2004).

It is possible that the pleasure experienced in intrinsic motivation is a conscious pleasure (or liking), as defined by Berridge & Robinson (2003), that takes effect while someone is engaging in an intrinsically motivating task. Conscious pleasures are explicit hedonic feelings involving opioid neurotransmission in the nucleus accumbens and mesolimbic outputs to the ventral palladium and related brain areas (Berridge & Robinson, 2003). Cognitive incentives operate so that the motivation (wanting) to engage in the task is the result of a memory of or expectation of what it felt like to engage in that task (or a similar task) on a previous occasion (Berridge & Robinson, 2003). It may be that those high in intrinsic motives such as need for cognition either experience more consciously pleasurable reactions than other people or are particularly sensitive to the rewarding effects of such experiences.

Steven Reiss (2004) proposes an alternative to unitary intrinsic motives theory. He identifies 16 different intrinsic motives (see table 1) that are similar to drives. Reiss calls them trait motives: they are genetically determined and have different evolutionary histories. Their satisfaction produces specific intrinsic positive feelings; although he does not identify a

mechanism responsible for producing these feelings.). Once satisfied, a desire eventually returns and continues to drive behavior. According to this theory, people's behavior is motivated by a desire to maximize their experience of the 16 intrinsic joys (Reiss, 2004

Table 1: Reiss 16 motives (adapted from Reiss, 2004).

Motive name	Motive	Animal behavior	Intrinsic feeling
Power	Desire to influence	Dominant animal eats more food	Efficacy
Curiosity	Desire for knowledge	Animal learns to find food more efficiently and avoid prey	Wonder
Independence	Desire to be autonomous	Motivates animal to leave nest, searching for food over larger area	Freedom
Status	Desire for social standing	Attention in next leads to better feedings	Self-importance
Social contact	Desire for peer companionship	Safety in numbers for animals in wild	Fun
Vengeance	Desire to get even	Animal fights when threatened	Vindication
Honor	Desire to obey a traditional moral code	Animal runs back to herd when stared at by prey	Loyalty
Idealism	Desire to improve society	Unclear: Do animals show altruism?	Compassion
Physical exercise	Desire to exercise muscles	Strong animals eat more and are less vulnerable to prey	Vitality
Romance	Desire for sex (including courting)	Reproduction essential for species survival	Lust
Family	Desire to raise own children	Protection of young facilitates survival	Love
Order	Desire to organize	Cleanliness rituals promote health	Stability
Eating	Desire to east	Nutrition essential for survival	Satiation
Acceptance	Desire for approval	Unclear	Self-confidence
Tranquility	Desire to avoid anxiety	Animal runs away from danger	Safe, relaxed
Saving	Desire to collect	Animal hoards food and other materials	Ownership

The single motive in this theory that would best explain need for cognition is 'curiosity.' According to Reiss, the basic motive of curiosity is a desire for knowledge experienced by both humans and other animals. Satisfaction of this motive produces the intrinsic feeling of wonder. Individual differences in intrinsic motivation can be explained by genetically determined differences in the 16 basic motives. According to this theory, those high in need for cognition would have a stronger curiosity drive than those low in need for cognition.

Research on need for cognition has taken off in many directions. Researchers from multiple areas of psychology have examined the relationship between need for cognition and a wide range of personality, cognitive, and other psychological factors. Research on need for cognition and decision-making has consistently shown that those high in need for cognition tend to be better and more effortful decision-makers. It has also provided some evidence that high need for cognition people enjoy decision-making more than low need for cognition people (LeBoeuf & Shafir, 2005; Zhixue & Wenhui, 2004, Levin, Huneke & Jasper, 2000).

Need to maximize

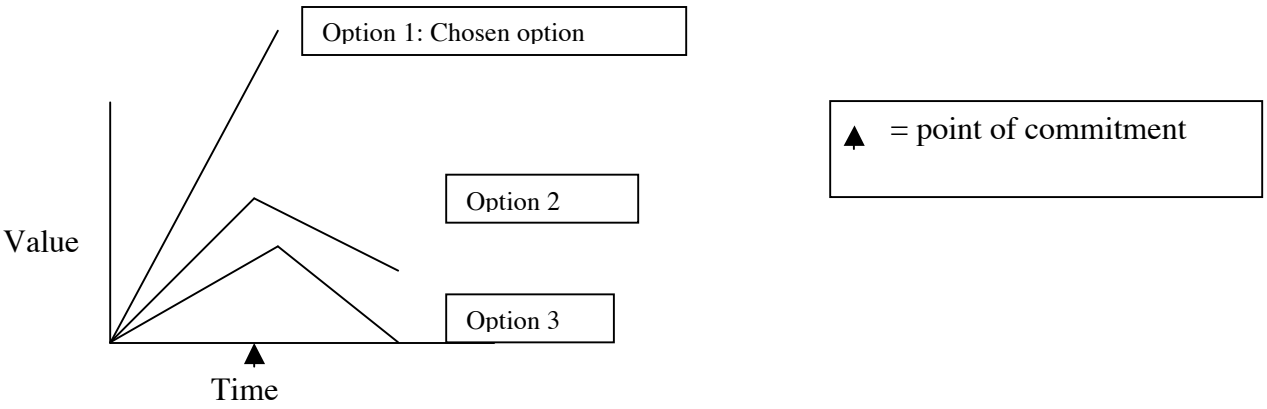
Research on individual differences in decision-making identifies two groups of decision-makers characterized by their distinct decision-making goals: maximizers vs. satisficers. As these terms suggest, maximizers are individuals that make every effort to maximize their options when making a decision. They have it as a goal to make an optimal decision where as satisficers have it as a goal simply to find the first option that meets their standard of acceptability. Maximizers are good decision-makers because they are willing to put a large amount of time and resource into their decision processes, conducting an exhaustive examination of all available information, in order to reach an optimal decision outcome. Satisficers, on the other hand, are

willing to select the first outcome that meets their criteria (Schwartz, Ward & Monterosso, 2002).

Despite strong evidence that maximizers are good decision-makers, recent research indicates that maximizers tend to experience negative affect surrounding a decision-process (Schwartz et al., 2002; Iyengar, Wells & Schwartz, 2004). This is because maximizers feel pressure to make the best possible decision, based on the best possible information at all times, and it is often impossible to determine whether or not one has done this. Therefore, maximizers often set themselves up to fail regardless of how optimal their decision-making process may be. They often experience frustration and anxiety during the decision-making process and regret and depression after they have made a decision. Maximization tendencies are correlated with mild chronic depression and perfectionism (Iyengar et al., 2004).

One possible factor underlying maximizing tendencies is that maximizers are not able to commit to a decision the way that normal decision-makers do. During a normal decision-making process, there is a point at which the decision-maker commits to one option and begins to devalue other options (see figure 1). Dissonance reduction and rationalization mechanisms kick in so that the chosen option becomes more and more favorable while the non-chosen options are devalued. It is likely that this stage of decision-making does not occur normally for maximizers, and that they continue to value multiple options for longer, making the decision-process less satisfying and more stress inducing (Schwartz et al., 2002).

Figure 1: Normal decision process (Valuation of options at point of commitment)



Need for cognition, need to maximize and decision processes.

Third variable correlational evidence suggests that high need for cognition may be negatively related to maximization tendencies. While need for cognition is positively correlated with sense of competence and self-esteem, maximizing tendencies are negatively correlated with self-esteem (Cacioppo et al, 1996; Schwartz, 2002). The need to maximize has been found to be positively correlated perfectionism, whereas need for cognition is negatively correlated both acute and chronic anxiety, both factors that are closely related to perfectionism (Schwartz et al, 2002; Cacioppo et al., 1996; Kawamura, Hunt, Frost & DiBartolo, 2001). Another important distinction between those high in need for cognition and maximizers is that maximizers tend to rely heavily on social comparison while those high in need for cognition do not (Schwartz et al., 2002; Cacioppo, 1996). Therefore, the profiles of high need for cognition people and maximizers differ (and contradict each other) in important ways.

Despite these differences in the characterizations of high need for cognition people and maximizers, one would expect the complex decision-making processes of high need for cognition people and maximizers to look very similar. Both groups tend to gather and evaluate

large amounts of information when making decisions, and to engage in lengthy decision processes (Cacippo et al., 1996; Iyengar, Wells & Schwartz, 2004). They are, however, driven by different motivational factors. Those high in need for cognition are motivated to invest time and resources in a decision process by their desire to experience pleasure and self-competence that comes with engaging in complex problem-solving/decision-making. According to Reiss's model of intrinsic motivation, this motivation is driven by an innate drive to be curious and, when satisfied, produces a pleasurable feeling of wonder. Maximizers, on the other hand, are motivated to invest heavily in a decision process in order achieve the best possible outcome. This motivation is likely driven by perfectionism, the need to measure up to those around them and the need to bolster a low self-esteem. Therefore, although those high in need for cognition may in fact be investing just as much time and energy in decision processes as maximizers and producing quality decision outcomes, they do not experience the negative factors that go along with being a "maximizer."

Based on the above model, if one were to present a high need for cognition group and a maximizer group with a complex decision to make, one would expect that both groups would: 1) Take a long time to make the decision as compared to controls; 2) gather more information during the decision-making processes than would controls; 3) make a more optimal decision than controls. One would also expect that high need for cognition people would experience positive emotions such as pleasure, wonder and sense of competence during the decision-making process and satisfaction following the decision-making process whereas maximizers would experience negative emotions such as anxiety and self-doubt during the decision-making process and regret following the decision-making process. Finally, one would expect high need for cognition people to explain their time and resource-intensive decision-making process by describing their

enjoyment of the decision-making process whereas one would expect maximizers to explain their similarly time and resource-intensive decision-making process by describing their desire to make the best possible decision.

In order to test the above hypotheses, one would need to establish at least three groups: high need for cognition people, maximizers and controls (as determined by performance on need for cognition and maximizing questionnaires) with a complex decision-making scenario. One would need to measure the amount of time spent making the decision, the amount of information gathered, and the affect experienced by the participants throughout the decision-making process. One would also want to obtain information about the participants' motivation for dedicating large amounts of time and energy to the decision-making process.

Additionally, in order to observe the affect of social comparison on the decision-making processes of a high need for cognition group and a maximizer group, one would want to conduct another experiment in which there are multiple individuals making a complex decision at once, with access to information about each others' decision processes and outcomes. One would predict that, when given the option, maximizers would seek to obtain information about other individual's decision processes and outcomes more often than high need for cognition people.

Finally, although third variable correlational evidence discussed above suggests that high need for cognition people and maximizers are not the same people, this has not been empirically tested. In order to answer this question, one would simply need to give both a need for cognition questionnaire and a maximization questionnaire to the same group of people. Because high need for cognition people and maximizers both engage in lengthy, effortful decision-making processes, one might expect any process items on the need for cognition and maximization scales to be positively correlated. Because of the different motivational and affective factors

influencing high need for cognition people and maximizers, one would expect motivational and affective items on the questionnaires not to be correlated or even to be negatively correlated.

If, indeed, it is possible for a person to be both high in need for cognition and a maximizer, this raises the question of what type of affective reaction such a person would have in a complex decision-making scenario. If a person obtains a high score on both questionnaires, one would expect him/her to engage in optimal, time and resource intensive decision-making processes. As far as this person's affective experience during and after the decision-making process, there are a couple of possibilities. Firstly, the person could behave like either a high need for cognition individual or a maximizer by succumbing to his/her positive experience of the challenging task or by experiencing such high levels of anxiety and regret that the task is no longer pleasurable or satisfying. Another possibility is that both enjoyment and stress could be experienced at the same time. In other words, the person could behave like both a high need for cognition decision-making as well as a maximizer (e.g. "I'm enjoying this task, but am stressed because I want to make the best possible decision").

Although it is has not been empirically demonstrated that individuals can't be both high on need for cognition and maximizers, high need for cognition people seem to possess certain strengths that may be protective against some of the negative factors related to the need to maximize such as low self-esteem, perfectionism and constant social comparison. Additionally, intrinsic enjoyment of a complex problem or decision may be protective against potential negative effects of performing that task such as a sense of failure, regret and depression. Both high need for cognition people and maximizers make high quality decisions. This is likely because of their tendency to engage in lengthy, thorough decision processes. Different motivational factors driving this tendency would be expected to contribute to different affective

experiences of the decision making process; however, further research is needed to better understand the decision-making experiences of these two groups.

References

Berridge, K.C. & Robinson, T.E. (2003). Parsing reward. *Trends in Neuroscience, 26(9),* 507 513.

Cacioppo, J.T. & Petty R.E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42,* 116-131.

Cacioppo, J.T., Petty, R.E, Feinstein, J.A. & Jarvis, W.B.G. (1996). Dispositional differences in cognitive motivation: The life and times of individuals varying in need for cognition. *Psychological Bulletin*, 119, 197-253.

Curseu, P.L. (2006). Need for cognition and rationality in decision-making. *Studia Psychologica*, 48(2), 141-156.

Iyenger, S.S., Wells, R.F. & Schwartz, B. (2006). Doing better but feeling worse: Looking for the "best" job undermines satisfaction. *Psychological Science*, 17(2), 143-150.

Kawamura, K.Y., Hunt, S.L., Frost, R.O. & DiBartolo, P.M. (2001). Perfectionism, anxiety and depression: Are the relationships independent? *Cognitive Therapy and Research, 25(3),* 291-301.

LeBoeuf, R.A. & Shafir, E.B. (2005). Decision making. In K.J. Holyoak & R.G. Morrison (Eds.), *The Cambridge handbook of thinking and reasoning* (243-265). New York: Cambridge University Press.

Levin, I.P., Huneke, M.E. & Jasper, J.D. (2000). Information processing at successive stages of decision making: Need for cognition and inclusion-exclusion effects. *Organizational Behavior and Human Decision Processes*, 82(2), 171-193.

Reiss, S. (2004). Multifaceted nature of intrinsic motivation: The theory of 16 basic desires. *Review of General Psychology, 8(3),* 179-193.

Schwartz, B. (2004). *The paradox of choice: Why more is less*. New York: HarperCollins Publishers.

Schwartz, B., Ward, A. & Monterosso, J. (2002). Maximizing versus satisficing: Happiness is a matter of choice. *Journal of Personality and Social Psychology*, 83(5), 1178-1197.

Zhixue, Z. & Wenhui, Z. (2004). Need for cognition and the process of strategic decision making. *Psychological Science (China)*, 27(2), 358-360.