An Analysis of how Individual Thinking and Decision Complexity Interactively Shape Decision Choice

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Abstract

Human decision making varies as a function of individual facets of the person as well as constructive elements inherent to the decision task. In this analysis we focus on essential ways in which humans can vary (e.g., cognition, age) as well as differences in external contextual forces (e.g., group, conformity). We propose this variability in personal and social forces motivates differences in thinking propensity. Acknowledging the differences in level of thought, we provide an overview for how a person's level of thought may interact with the difficulty of the decision task. We summarize by providing an overall model to assist in organizing and interpreting how a person's level of thinking interacts with varying levels of decision complexity to yield predictable performance differences in decision-making.

Background

In this analysis we rely upon a dearth of prior research to support the contention that an individual's level of thinking will influence their decision choice. Given the developed body of research around this idea, we focus on two primary question. 1) How do individual differences and social/contextual forces come together to shape decision choice? 2) Does the nature of the decision task (simple to complex) interact with the level of individual thinking to influence decision choice?

There has been a history of research suggesting that more thinking will lead to better decision-making (e.g., 12, 13, 14, 15, 19), with some notable exceptions (e.g., 21). There is a fair amount of research that suggests more thinking will lead to better decision making [2,3,4,5]. In fact, some of the most prominent theoretical work focuses on this general idea of more thinking; better decision-making. Take for example work by Kahneman and colleagues [6,7,8] as well as Stanovich and West, (20) both of which espouse a System 1 and 2 approach proposing that most decisions are made by *System 1* which functions automatically with little or no effortful thought. System 2 thinking involves effortful thought involving comparisons and analytic type thinking. Consequently, the more thoughtful System 2 should produce a more optimal decision outcome, assuming the decision task is sufficiently complex for more thinking to have an advantage. In a similar manner, Fuzzy Trace Theory (e.g., 17, 18) depicts parallel processing operations between verbatim and gist mental representations. Gist is considered to involve *less thinking* but captures the essential essence of information whereas verbatim is more precise and associated with *more* thinking.

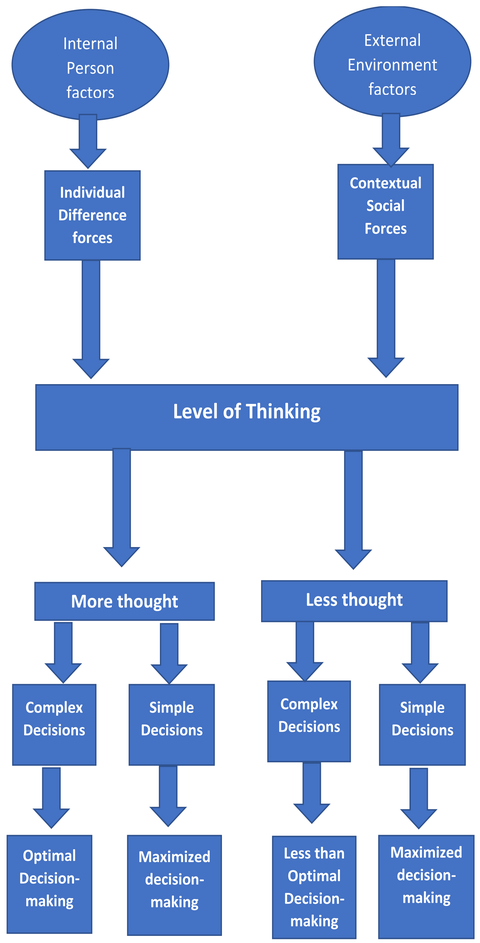
A number of individual difference factors have been shown to influence decision-making and work in this area is widely engaging (e.g., 10,11). The work on individual differences and decision-making falls under a diverse umbrella, including many different individual differences. Consider the variable of human development, a good deal of research has shown that this variable has influence on decision making (6) and more cognitively-oriented variables such as Numeracy also play a role in decision making (4, 16)

Another factor we identify that is common to all decisions is the level of complexity inherent to the decision-making task (1,15). It is generally assumed that more complex decision-making tasks require more cognitive resources and should be influenced by relative differences in cognitive variables such as numeracy as well as age-related cognitive decline.

Research from our labs has tested how thinking, motivated by individual and social factors, interacts with the complexity of the decision task. For example, in one study (13) it was shown that higher levels of the individual difference variable of Need-for-cognition lead to enhanced performance on complex decisions but not on simpler ones. In a similar manner, it was also shown that manipulating cognitive ability through glucose lead to the led to the finding that more cognitive resources (glucose enhancement) lead to better performance on complex decision tasks but no change on simple ones. In another study examining social factors (2), it was shown that participants made moderately complex decisions involving the Cognitive Reflection Task (CRT) (22). We had them solve these decisions with or without a group discussion and participate either by themselves or in groups ranging from 2 to 24 members. It is assumed that the group variables will lead to more thoughtfulness and more thoughtfulness is associated with better performance on this task. The results showed that the social variable of dyadic and group discussion led to increased decision performance on this rather complex decision task and this effect was greatly enhanced when at least one member of this social group had the correct solution.

Based on our review of the literature and findings from a series of studies we developed a model to capture how person and social factors influence thinking and work interactively with the complexity of a decision to help shape decision choice.

A conceptually representation of The Interactive Thinking Model



Forces that shape level of thinking

We propose the following conditions:

- The decision environment consists of two fundamental forces: internal person factors and external contextual/environmental factors.
- These forces work interactively and produce the level of thinking inertia implemented in any given decision-making task.
- The level of thinking varies along a continuum from minimal thinking effort to the person's own maximum thinking ability.

The interactive nature of thinking and the decision task

- To achieve optimal decision-making performance, the level of thinking applied to the decision task must be minimally sufficient to correctly portray and accurately compare the decision-making task and its alternatives. We call this the "Performance Threshold".
- Once this Performance Threshold is met, then thinking beyond the threshold (i.e., more thinking) will not yield better decision-making performance.
- If a decision task is simple and minimum level of thought is sufficient, then thinking more about the decision will not produce better performance.
- If the decision-making task is complex, then more thought should increase decision-making performance up to the Performance Threshold.
- Decision making performance should be a function of the level of thought applied to the decision-making task and the level of complexity inherent to the decision-making task.

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