Increasing Intuitive Decision Making Speed and Accuracy by Further Understanding Intuitive Decision Making Using Emotional Means

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ABSTRACT

Up to this point, the role of intuition in decision making (instantaneous decisions without conscious awareness) has not received adequate attention by those outside the field of psychology (Hodgkinson, Langan-Fox, & Sasler-Smith, 2008). Herein, we argue that many important decisions are made within organizations without the use of the conscious mind. For instance, if an individual encounters a situation, they simply react in a way that has worked in the past without thinking, such as responding to anger with anger. Affect (i.e., emotion) has been shown to play an important role in this intuitive decision making (Lieberman, 2000, 2007). Intuitive ability can be increased by training individuals to implicitly recognize affective environmental cues and rapidly match them to commonly recurring emotional patterns, which lead to effective problem solving and decision making (Hodgkinson et al., 2008). We present a model of intuitive decision making that outlines how pattern matching is used by the brain to make decisions without our awareness. The result of this study can assist organizations in how to train their members to make better intuitive decisions.

INTRODUCTION

Intuitive decision making, i.e. nonconscious, also termed subconscious or unconscious, is an important area of study because it involves the understanding of how decision are influenced without conscious control. The role of this type of decision making is even more important when split second decisions must be made. In time restricted situations, leaders must make decisions on the fly without time to consciously evaluate alternatives. In these instances the mind often uses pattern matching to determine what has worked in similar situations in the past and a nonconscious decision is made and action is taken. If such a match is not made, conscious processes may intervene. Herein, we argue that emotions play a role in this process. We first outline our model of intuitive decision making, discuss the role emotions play, and outline an agenda for assessing this model in the future.

IMPLICIT LEARNING AND INTUITION

When we speak of intuition we are referring to instantaneous, affective decision making that occurs without the conscious awareness of the individual making the decision (Hogarth, 2001). Implicit learning and implicit knowledge contribute to the knowledge structures upon which individuals draw when making intuitive (nonconscious) judgments (Hodgkinson et al., 2008). One can improve his or her ability to make intuitive decisions, but first we must understand how these decisions are made.

When making decisions, different regions of the brain each contribute in different ways, depending on the task environment and user state, to the processing of information leading to behavior (Philiastides & Sajda, 2007). Our model intends to provide insight into which regions are involved in intuitive decisions. We believe perception is a key component to understanding this process. The perception process involves receiving sensory data and then organizing this data in a meaningful way that ties to perceptual experiences (patterns) held in one's memory (Luu, Geyer, Fidopiastis, Campbell, Wheeler, Cohn, & Tucker, 2010). As Luu et al. (2012) argues, perception is not something that is simply apprehended, rather, it must be organized over time to have meaning. How this information is perceived and processed will affect how the perceptional patterns of new situation are matched with previous perceptual patterns, without conscious awareness, to make intuitive decisions.

This concept of intuitive, or nonconscious, decision making is not new. For instance, Klein (1989) proposed a rapid decision model he called the Recognition Primed Decision (RPD) Model. This model is designed to assist in understanding how individuals use past experiences to avoid the shortcomings of other analytical strategies. For instance, those unfamiliar with, or lacking the ability to use analytical strategies such as pairwise comparisons, may rely on other decisional alternatives, such as the RPD Model. This RPD Model outlines how situational assessment and mental simulations are combined to determine a course of action. Klein (1989) finds that this

type of "recognitional decision making" is more common than other analytical decision making processes.

THE ROLE OF EMOTION

Affect (i.e., emotion) has been shown to play an important role in the neural, cognitive, and behavioral aspects of intuitive decision making (Lieberman, 2000, 2007). Intuitive ability can be increased by training individuals to implicitly recognize affective environmental cues and rapidly match them to commonly recurring emotional patterns, which lead to effective problem solving and decision making (Hodgkinson et al., 2008). Lessons learned in conceptualizing affective intuitive decision making will be easily transitioned to other intuitive decision making domains. Thus, training individuals to accurately recognize emotions in others can improve the accuracy of information used in their intuitive decision making and metal simulations.

STUDY OBJECTIVE

To increase the speed and accuracy of intuitive decision making by further understanding intuitive decision making using emotional means. We argue that to improve one's intuitive decision making, neural processes should be modified, through education, to encode information in the long-term memory (see, Wichens & Holland, 2000; Cohn, 2011). Although the model presented herein is designed specifically for the military, our results will support selection, training, decision aiding, and interface design for a wide range of users. Our unique approach to increasing intuitive decision making will allow individuals to process and make sense of large volumes of information in time constrained or information-degraded conditions.

TECHNICAL APPROACH

Our conceptual model (Figure 1.) was developed using recent advances in neural, cognitive, and behavioral modeling. We believe that there are three areas where intuitive decision making can be enhanced: (1) knowledge of self and one's propensity to make decisions, (2) use of structure of knowledge concepts to frame problems that have never been encountered, and (3) sensemaking process used to evaluate the environmental response to a decision and then storage of the new information. Each of these training areas is expected to increase the number of decisions that are made intuitively while reducing the time needed to make conscious decisions.

We characterize how intuitive decision making works through our conceptual decision making model (Figure 1.), which uses dual process (implicit and explicit) theory. Intuition is a complex set of inter-related cognitive, affective, and somatic processes in which there is no apparent intrusion of deliberate, rational thought (Hodgkinson et al., 2008), thus implicit in nature. The other process is the explicit, conscious or analytical, aspects of decision making.

Our model depicts the intricate interplay of the conscious and non-conscious decision making processes. Once an outside event occurs an individual will either sense or not sense the event. If the event is sensed the person has four potential decision making processes, two of which are intuitive and two combine intuition and conscious thought:

1. Intuitive Exact Match - If the event matches a previously stored pattern and no conscious decision over-ride is implemented.
2. Intuitive Similar Match - If the event is a similar match but the neural activation does not exceed the requisite threshold to enact conscious thought (Kihlstrom, 1999).
3. Conscious Over-ride - If the event matches and a conscious decision is made to act in a manner other than intuitive.
4. Conscious Vu JaDe – Weick (1969) used this term to describe when a person "has never seen something before" which is the opposite of déjà vu. In this case there is no pattern match and the responder is left to their own innovative processes to develop and implement a conscious decision which is constructed on the fly as the situation demands.

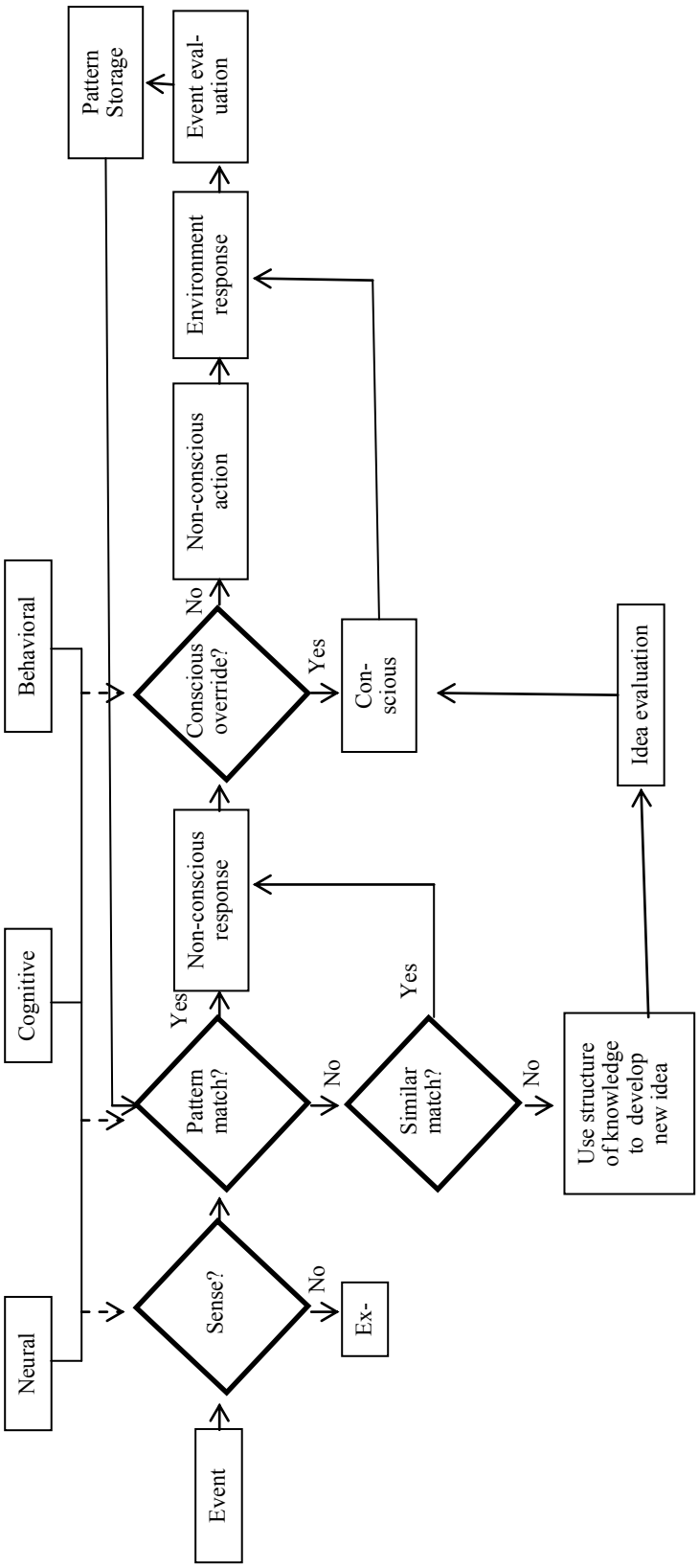
A person's neural, cognitive, and behavioral processes can influence the sensing process, pattern matching, and propensity to consciously over-ride intuitive actions. Based on this conceptualization, we believe that there are three areas where intuitive decision making can be enhanced: (1) improved knowledge of self and one's propensity to make decisions, (2) increased use of structure of knowledge concepts to frame problems that have never been encountered, and (3) efficient sensemaking used to evaluate the environmental response to a decision and then storage of the new information. Each of these training areas is expected to increase the number of decisions that are made intuitively while reducing the time needed to make conscious decisions.

EVALUATION OF MODEL

We will validate this model and develop innovative, scalable, and affordable technologies that blend the best measurement technologies and modeling approaches with scenario/simulation based training solutions to enable cost effective dissemination of these technologies to a wide range of users. Our tasks are:

1. Validate conceptual model – we will validate our conceptual model using a laboratory experiment with a wide range of users. We will develop scenarios that test the intuitive and conscious decision making processes when matching existing, similar, and ambiguous patterns. The testing will consist of two segments. The first will be for the accurate detection of emotions and the second will determine the accurate emotional response. A picture of an individual displaying a specific emotion will be shown to the participant for 0.5 seconds. The participant will electronically record their response. Time and accuracy of decision making will be measured. Intuitive responses are expected to occur much sooner than conscious decisions (Luu et al., 2010).

FIGURE 1. INTUITIVE DECISION MODEL
EXHIBIT 1



2. Evaluate control variables – research on affect has shown that there are many variables that can moderate the decision making process. We will use the following scales and control variables: personality Five Factor Model (IPIP), cognitive intelligence, emotional intelligence (MSCEIT), self-awareness, self-management, social awareness, & relationship management (ECI), sensemaking, risk aversion, age, years in service, and Gender.
3. Modify model if necessary – evaluate model to determine if adjustments need to be made to the process, measurement, or participants.
4. Publish and disseminate results for conceptual model to characterize how emotional intuition works and how it can be used in other intuitive decision making areas.
5. Develop training
    a. Self-knowledge training will be developed to educate individuals about accurate emotion and emotion response detection. Individuals will gain insight into their current detection abilities and be specifically trained to be better at accurate detection.
    b. Pattern matching training using structure of knowledge will be developed to provide individuals with an understanding of how to place emotion detection in a conceptual framework versus a factual framework. Structure of knowledge emphasizes abstract reasoning instead of concrete knowledge. Examples would include recognition of situations where there is a sense of well-being versus those that are perceived to be threatening.
    c. Effective post-event sensemaking training will be developed to provide participants with mistake identification, event evaluation, and event replay to assess and analyze the effects of decisions. This assessment will allow members to determine what adjustments needed to be made in the future.
6. Test intuition model with training will be conducted using approximately 320 people across eight evaluation groups. Members will be randomly assigned to evaluation groups so that approximately 40 members will be in each group. These groups are assigned as depicted in Table 1.
7. Evaluate results from intuition model training. Results will provide training techniques and technologies that enhance intuitive decision making performance.

CONCLUSION

Individuals frequently make decisions without the use of their conscious mind. Although these decisions are not consciously contemplated, they are important to individual success and the success of the organizations in which they work. We have outlined a model of how these decisions are made which also details if and when the conscious mind is brought into the process. A process of testing this model is outlined. Finally recommendations are made on how the results of this study can be used by organizations to improve the intuitive decision making processes of their members.

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EXHIBIT 2
TABLE 1. EVALUATION GROUPS

Group	Self-Knowledge Training	Pattern Matching Training	Sensemaking Training
1	X		
2		X	
3			X
4	X	X	
5	X		X
6		X	X
7	X	X	X
8			

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