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8. DECISION MAKING PROCESSES AND ICT DECISIONS IN EDUCATION

INTRODUCTION

Enterprise-wide decisions, by definition, have significant impact on the overall well-being of an organization, such as a university. Senior administrators must routinely balance current and future needs, threats, and opportunities. Any significant shift away from the status quo entails many challenges and risks. Unfortunately, the fact that a decision is important and may have far-reaching implications does not mean that university administrators can just unlock the campus crystal ball, peer into the future, and make a decision that will be guaranteed to turn out well. Lower level decision makers, such as department chairs or individual faculty members have even less access to the crystal ball, as they typically have little or no control over the allocation of resources from other areas of the institution, such as centralized technical support services.

There are many reports of attempts to incorporate Information and Communications Technologies (ICTs) into education facing unexpected challenges or failing to meet expectations (e.g., Brzycki & Dudt, 2005; Condie & Livingston, 2007; Hedberg, 2006; Romiszowski, 2004; Wilner & Lee, 2002). In the early days, computer-based educational technologies were touted as cure-alls that would reduce costs, lead to sharing rather than duplication of resources, and enable every student to experience individualized learning instead of the anonymity of large lectures (Bitzer, Lyman, & Easley, 1966; Learning Alliance for Higher Education, 2004; Slack, Morris, van Houweling, & Wishbow, 1984; Wiley, 2000). Yet, not only do traditional lectures persist, when given a choice, many students still opt for face-to-face classes rather than online offerings. The costs have certainly not dwindled, and most professors still rely on traditional published textbooks, supplemented with resources they have created themselves. Some may claim that this means technology-based educational delivery does not work and should be abandoned, but the technologies involved – computers, the Internet, mobile devices, etc. – are too integrated into our society for universities to be able to back away from them and still claim to be preparing graduates for the future. Instead, the focus has shifted to a change in expectations – to the idea of ICTs augmenting, instead of replacing, traditional methods. Yet as long as both hardware capabilities and software options continue to change rapidly, academic decision makers will continue to be bombarded with opportunities to make influential decisions with respect to the uses of ICTs in education, and they will need to make these decisions without certain knowledge of the outcomes.

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By looking at research in the field of judgment and decision making (JDM) and considering how it applies to ICT decisions in the academy, this chapter will help administrative and front line decision makers in universities to understand how natural biases in human decision-making processes can influence our “better judgment” and how being aware of these systematic biases can improve the chances of making the decisions that will enable ICTs to have a greater positive influence (and fewer negative impacts) on education in the future.

ICT DECISIONS IN EDUCATION

Academic decision makers know that every action entails some risk, and they generally diligently consider information identified as relevant to try to predict and mitigate those risks as effectively as possible, but this is not the same thing as being able to guarantee the outcomes of decisions. The record shows far too many instances of ICT decisions being made without consideration of critical factors, ranging from ensuring initial buy-in to effective planning for ongoing maintenance and support. Thinkers, such as Bates (2000), have responded to these instances of 20/20 hindsight by developing educational technology-specific guidelines that decision makers can use to build a more comprehensive picture of a situation before making an ICT adoption or continuation decision. For example Bates’ SECTIONS model (Bates, 2000, 2005; Bates & Poole, 2003; previously known as ACTIONS) reminds decision makers to consider many key aspects of educational ICT decisions, such as user (student) needs, usability, *all* costs (not just the initial investment), teaching/learning goals and methods, and organizational issues (see Figure 1). The SECTIONS framework is not a comprehensive checklist; rather, it is a guide to prompt discussion of specific considerations as they apply to each decision context, and as such, it can be very useful.

However, such tools do not address more basic questions of how systematic biases in human reasoning processes affect all decision makers, including those making decisions about ICTs in education. These processes will be the focus of the remainder of this chapter.

A BRIEF OVERVIEW OF HUMAN DECISION MAKING RESEARCH

A single chapter does not provide enough space for a thorough review of the vast literature on decision making. Instead, this chapter will present a sampling of some of the key ideas from this literature that may be most revealing to those tasked with making decisions about ICT adoption and implementation in educational institutions. This overview may then serve as a guide to additional readings or as a starting point for discussion.

Two kinds of decisions are of interest in the current context: adoption decisions and progress decisions (Moon, 2001). In adoption decisions, one must decide whether to begin a task, buy a certain product, etc. There are many examples of

S	Students: what is known about the students – or potential students – and the appropriateness of the technology for this particular group or range of students?
E	Ease of use and reliability: how easy is it for both teachers and students to use? How reliable and well tested is the technology?
C	Costs: what is the cost structure of each technology? What is the unit cost per learner?
T	Teaching and learning: what kinds of learning are needed? What instructional approaches will best meet these needs? What are the best technologies for supporting this teaching and learning?
I	Interactivity: what kind of interaction does this technology enable?
O	Organizational issues: What are the organizational requirements and the barriers to be removed before this technology can be used successfully? What changes in organization need to be made?
N	Novelty: how new is this technology?
S	Speed: how quickly can courses be mounted with this technology? How quickly can materials be changed?

Figure 1. SECTIONS model for making decisions about educational technologies (Bates & Poole, 2003, pp. 79–80).

ICT adoption decisions in education, including such decisions as whether to adopt a particular enterprise-wide course management system, whether to purchase (or require students to purchase) laptops for every student in a class, and whether to switch from on-campus labs to online simulations in a first year physics class. Progress decisions, on the other hand, refer to implementation situations. Once the adoption decision has been made, there is work involved in getting everything in place; from there, there are ongoing operations to manage. Both the initial set-up project and the ongoing operations can go well or poorly, and decision makers must monitor the progress and periodically decide whether to continue with the chosen ICT plan or not.

Both adoption and progress decisions, generally, must be made under conditions of incomplete information. By this I mean that there is no way to collect enough information in advance to guarantee the outcome of a chosen course of action. For this reason, such decisions are often referred to examples of as choice under uncertainty.

The Rational Model of Human Decision Making

In the classical, normative view of decision making, people are considered to be rational agents seeking to maximize their subjective utility with each decision.

> The "rational actor" (i.e., the typical person) chooses what options to pursue by assessing the probability of each possible outcome, discerning the utility to be derived from each, and combining these two assessments. The option pursued is the one that offers the optimal combination of probability and utility. (Gilovich & Griffin, 2002, p. 1)

That is, humans weigh all facts, as a computer might, and choose the option with the best overall personal outcome. Any variance from the optimal solution is interpreted as a flaw or error in reasoning that could be repaired with adequate instruction in those of normal intellectual capacity. According to Kahneman and Tversky's description of this model, "It is assumed that all reasonable people would wish to obey the axioms of the theory…and that most people actually do, most of the time" (1979, p. 263).

This very information processing (IP) view predates IP views of cognition by several hundred years. As early as Bernoulli (1738/1954), the view of humans as completely rational decision makers was prevalent. This view also has some intuitive appeal – most people, especially professional decision makers such as managers and administrators, do not think of themselves as making irrational decisions or being influenced by factors that they cannot describe (Kahneman & Lovallo, 1993; Nisbett & Wilson, 1977). It would be comforting to think that every decision about ICTs in education involved accurate assessments of all possible outcomes prior to the objectively defensible "correct" decision being made. However, this is not quite how humans make most decisions most of the time! This is not to say that human decision making is flawed; rather, research shows simply that it often does not follow the cognitively demanding normative approach. For this reason, understanding what people actually do when making decisions is important.

Cracks began to appear in the normative view as researchers started to notice what appeared to be systematic biases in the decisions people make. Groundbreaking work by Kahneman and Tversky (1979; Tversky & Kahneman, 1973, 1974) brought these "exceptions" to the fore and showed that, in fact, the classical, rational model of human reasoning is the exception. Most of the time, people use quite different, more automatic, approaches to decision making. People tend to take shortcuts, they are influenced by affect, and they are influenced by subjective perceptions of gains, losses, and problem frames. Further, when deciding whether to continue with a faltering plan, decision makers are influenced by factors that the rational model predicts should have no impact on decision making, such as feelings of entrapment.

The following sections describe each of these issues in turn and show how they may relate to decisions about ICT use in post-secondary education. However, these descriptions only scratch the surface of the significant literature in each area, thus providing ideas to consider and, I hope, motivation to read more about the fascinating and practical study of judgment and decision making.

Heuristics and Biases

Several researchers (e.g., Kahneman, 2003; Sloman, 2002) have postulated that humans use two systems of reasoning – an associative system that operates rapidly (analogous to our perceptual systems) and a rule-based system that operates more deliberately and effortfully. The more rapid system relies on the automatic activation of heuristics or "rules of thumb" to simplify decision making. It enables us to get by in many of our day to day decisions without too much influence from the more rule-based system. The rule-based system allows us to cross-check automatic decisions and helps us to correct for errors that may have been introduced through hasty use of heuristics. Problems arise when this second system fails to catch an instance in which heuristic reasoning has led to a sub-optimal decision.

According to Kahneman and Tversky's conception, heuristics operate by leading us to automatically substitute easier decisions for more difficult ones (Kahneman & Frederick, 2002, 2005; Tversky & Kahneman, 1974). For example, a broad, complex question such as, "How likely is it that this new technology will improve student outcomes?" is likely to be replaced by an easier question such as, "Would I like to be a student in a course that uses this technology?" The use of such shortcuts is adaptive because, much of the time, the substituted decision will be accurate enough for our needs. However, there are times when heuristics can lead to poor decisions, and decision makers need to be on alert for such situations.

Tversky and Kahneman (1974) initially identified three general purpose cognitive heuristics – availability, representativeness, and anchoring/adjustment, and these are still useful in illustrating the types of systematic cognitive biases that typically influence decision making. More recently, researchers have also begun to investigate affective shortcuts that may have systematic effects on decision making.

Availability

Complex decisions may hinge on a large number of interrelated factors, but explicitly considering every factor and every interrelationship is a cognitively demanding task. Initial work by Tversky and Kahneman (1973; Kahneman, 2003) demonstrated that people tend to work with a subset of all relevant information, specifically that information that is most available. In one classic study, Tversky and Kahneman (1974) asked participants to decide whether there are more English words of at least three letters that begin with the letter "r" or that have "r" as the third letter. Participants were more able to easily generate examples of words that started with r than words that had r as the third letter, and they incorrectly judged that words in the first category were more frequent. According to Tversky and Kahneman, participants substituted the judgment, "How easily can I bring to mind words in each category?" in place of the more difficult judgment, "Which type of word is more frequent?" Thus participants relied on judgments of the subjective availability of relevant information rather than on direct judgments of word frequencies.

More recently, Shwarz and Vaughn (2002) have differentiated between ease of recall and content of information recalled to try to better understand the mechanism underlying the availability heuristic. The availability of examples of successful use of online discussions to promote deep learning can be thought of in terms of, "How *easy* is it for me to think of such examples?" or in terms of, "How *many* such examples can I generate?" In the first case, "availability" equates with ease of retrieval; while, in the second case, availability equates with a judgment of the content that is retrieved. In reviewing published research, Schwarz and Vaughn conclude that people generally rely on the ease with which examples come to mind, unless they have reason to discount this information. In these cases, people will look to the content of the available information and use this as the basis for the decision. Being aware of a natural bias towards putting undue weight on the ease with which something comes to mind and the type of examples that come to mind can help decision makers guard against the effects of over-reliance on this heuristic.

Representativeness

The classic example of an error in reasoning due to use of the representativeness heuristic involves Linda, the feminist bank teller (Tversky & Kahneman, 1983). Participants received a description of a woman that included statements consistent with – or representative of – a feminist, such as, "As a student, she was deeply concerned with issues of discrimination and social justice" (p. 297). They were then asked to rate the likelihood that Linda was (among other possibilities) a bank teller, a feminist, and a feminist bank teller. Logically, regardless of what description one has of Linda, it cannot be *more* probable that she is *both* a bank teller *and* a feminist than that she is a bank teller (only) or that she is a feminist (only). The probability that she is both is, by definition, the product of the two individual probabilities. So, if a participant judged that there was a 20% chance that Linda was a bank teller and a 50% chance that she was a feminist, then, there should be only a 10% chance (.20 x .50) that she was both a feminist and a bank teller. Yet, participants consistently rated it more likely that Linda was a feminist bank teller than that she was only a bank teller. Kahneman and Tversky explain this as the result of making judgments based on representativeness. In other words, rather than considering base rates or formal rules of probability, participants made their judgments based on how much the description of Linda made her look like their idea of a bank teller and how much she looked like their idea of a feminist bank teller.

In the case of ICT decisions in education, availability and representativeness can lead to biased decision making when one unintentionally places too much weight on subjectively available information about a possible course of action. Availability, for example, may lead a decision maker to overestimate the probability of an outcome that is easier to imagine in detail or that the decision maker has spent time thinking through (Sherman, Cialdini, Schwartzman, & Reynolds, 1985). What one finds easier to imagine, in turn, may be influenced by experience. An educator who has recently attended a workshop in which many users of a new technology – such as an online discussion tool – provided glowing examples of how that tool has improved learning at their institutions would likely find it relatively easy to imagine successful outcomes. Another educator who has little or no experience with online discussions, on the other hand, would find the descriptions of effective student activities that used this tool more difficult to imagine (such outcomes would be less available), and such approaches would also tend not to look like (be representative of) what this person thinks good education is. Making a deliberate effort to involve all of the decision makers in generating both positive and negative outcomes of a particular decision will help to make a broader range of possible outcomes more accessible and will also help to bring to light underlying assumptions, such as individual perceptions of what constitutes effective education.

Anchoring and Adjustment

Whether we realize it or not, our judgments are influenced by the first anchor point that we hear on an issue, regardless of the relevance of that anchor to the decision at hand. Although anchoring and adjustment does not fit what has become the classic definition of a heuristic as a process in which an easier decision is substituted for a more difficult one (Kahneman, 2003), it was initially classified as a heuristic and is still an example of reasoning by taking shortcuts – in this case, by overweighting the relevance of initial information. For example, when presented with a proposal to move 15 face-to-face courses to online delivery, the perceived magnitude of this change will vary depending on whether the preamble to the proposal refers to the 1,000 courses on offer at the institution or to a previous initiative to make some other change to the delivery style of two courses. Neither reference provides particularly relevant information to the current decision. Yet, when decision makers anchor on 1,000 courses, 15 can seem like a small number, and when decision makers anchor on two courses, 15 becomes a relatively large number (cf. Chapman & Johnson, 2002).

Wilson and Brekke (1994; Wilson, Centerbar, & Brekke, 2002) describe the influence of these anchor points as mental contamination. According to their model, the initial number triggers unwanted mental processing that the decision maker may not even be aware of. Even if one is aware of automatic comparisons between the number given and the current proposal, it may not be possible to correct for the bias.

Anchoring does not have to be tied to simple, numeric information. Kahneman and Lovallo (1993) make the case that decision makers also tend to anchor "on plans and on the most available scenarios" (p. 29). This becomes a problem in that the "best" plan is usually the one that is most susceptible to regression to the mean (i.e., is likely to achieve more typical results than the exceptionally good results forecast). Thus, even if the plan is moderately successful, this is likely to be perceived as a disappointing outcome if the decision makers have anchored their expectations on spectacular success. Kahneman and Lovallo argue that this type of anchoring – and failure to correct – result from using an inside view to assess the situation. When using an inside view, decision makers focus on the unique aspects of the current situation (e.g., “We believe we’ve got a great team of enthusiastic people” or “We know we were successful in our last project”), at the expense of more general statistical information about the population of similar projects.

Taking an outside view, by looking at success rates and risk factors for similar projects, can lead to much more realistic assessments. Unfortunately, it can be difficult to identify an appropriate outside perspective: “What class should be considered, for example, when a firm [or university] considers the probable costs of an investment in a new technology in an unfamiliar domain?” (Kahneman & Lovallo, 1993, p. 25). Thus anchoring can be both difficult to detect, when one is immersed in a particular decision making context, and even more difficult to overcome. However, making the effort to take an outside view when assessing ICT timelines, costs, and expected outcomes can help decision makers to set realistic expectations and avoid the disappointment and resistance to future ICT projects that can arise when “our” project winds up being just as challenging as the many similar attempts to implement new ICTs at other institutions or in other departments.

Affect Heuristic(s)

Research in the 70s and 80s focused on the role of cognition in decision making. More recently, researchers have begun to investigate the role of affect in decision making (Finucane, Peters, & Slovic, 2003; Loewenstein, Weber, Hsee, & Welch, 2001; Wong & Kwong, 2007; Wong, Yik, & Kwong, 2006). “*Affective valence* is a natural assessment, and therefore a candidate for substitution in the numerous situations in which an affectively loaded response is required” (Kahneman & Frederick, 2002, p. 57; emphasis in original). Affective judgments can occur almost as quickly and effortlessly as perceptions and are another potential source of systematic, heuristic biases in reasoning (Kahneman & Frederick; Slovic, Finucane, Peters, & MacGregor, 2002).

Slovic and colleagues (Slovic et al., 2002) have shown that the perceived risks and perceived benefits associated with a possible decision are negatively correlated. This correlation is interesting because it is entirely possible for an option to have both very positive benefits and very negative risks. Slovic et al. demonstrated that providing information about a perceived risk will increase the negative affect associated with an option, and this, in turn, will decrease the perceived benefits. The reverse holds true when decision makers are provided with information about the benefits of an option. Thus options perceived as good tend to be judged as having high benefits and low risks, and options perceived as bad tend to be judged as having high risks and low benefits – at least in part because of the affect associated with the option.

Schwarz (2002) provides a slightly different interpretation of an affect heuristic – the "how-do-I-feel-about-it?" heuristic. When using this heuristic, decision makers automatically substitute the intuitive judgment, "How do I feel about this?" in place of a more difficult judgment such as, "What will be the impact of diverting funds from the library to provide more on-campus computer labs for students?" Unfortunately, this heuristic can be influenced by such transient factors as the decision maker's overall mood state. The observed correlation between the New York City Stock Exchange and the weather in New York City, for example, has been attributed to the impact of weather on how people feel and the resulting decisions they make (Saunders, 1993).

Loewenstein et al. (2001) provide yet another interpretation of the connection between affect and decision making. In their work on risk-as-feelings, they identify two different ways that emotions can influence decisions. Anticipatory emotions are emotions that the decision maker feels during the decision-making process. Peters and Slovic's (1996) concept of dread (perceived lack of control) is one example of a strong anticipatory emotion that can push decision makers towards being more risk averse than a purely cognitive assessment of the situation would warrant (Loewenstein et al.). Anticipated emotions, on the other hand, refer to one's predictions of how one will feel if this or that outcome comes to pass. Situations with high risks and uncertain benefits are particularly easy to imagine as leading to regret, and it has been well-established that perceptions of future regret can influence the decisions that people make (e.g., Miller & Taylor, 2002).

The introduction of ICTs can result in significant changes in the way an institution or an instructor approaches teaching and learning. This can, quite reasonably, lead to concern over managing resources and ensuring the well-being of students. A decision maker who approaches an ICT decision by first considering benefits is likely to have a more positive affective response and down play the potential risks, compared to another decision maker who approaches the same decision by first considering risks. The different affective judgments are also likely to lead to both different anticipatory emotions and different anticipated emotions, thus resulting in different answers to the question, "How do I feel about this plan?" Yet most decision makers will be unaware of the impacts of affect on their cognitive evaluation of the proposal.

Losses, Gains, and Frames

In addition to investigating shortcuts that may lead to systematic biases in decision making, Kahneman and Tversky (1979) contributed seminal work on the question of what exactly it is that people consider when making decisions. In the classic economic model, decision makers are expected to consider final states – will this or that option put the organization in the best position? However, in introducing prospect theory, Kahneman and Tversky argued that people generally do not make decisions based on end states. Instead, they consider options in terms of potential *change* from the current situation or status quo. Thus every decision becomes a choice among gains and losses, rather than a consideration of best outcomes.

However, people show diminishing sensitivity to the size of these gains and losses (LeBoeuf & Shafir, 2005). For example, the perceived benefit of installing 60 additional computers in on campus computer labs will be less than double the magnitude of the perceived benefit of installing only 30 additional computers. The more computers that are installed, the less each additional computer contributes to the overall perception of value-added.

Another important finding within prospect theory is that the way a choice situation is framed can have a significant impact on the resulting decision (Kahneman & Tversky, 1979; LeBoeuf & Shafir, 2005). More specifically, people tend to be risk-averse when a decision is presented as a choice between positive outcomes and risk-seeking when a decision is presented as a choice between negative outcomes. Consider a scenario in which a department is trying to increase enrolments. The department has decided to open up additional seats by adding a new section in a course that always has a long wait list. The department must decide, however, whether the new section should be online or lecture-based. The curriculum committee is confident in their predictions of enrolment for the lecture option, but they are less certain about what to expect with an online option. Assuming the target enrolment for the course is 150 students, how the two options are framed may affect the committee's choice (see Figure 2). In each case, prospect theory predicts that the starred option will be selected. Notice that if you calculate the expected values of all four options, they are the same (120 students, i.e., 30 short of the target). However, research shows (a) that people will generally express a strong preference for one option over the other within each pair (A-B and C-D), and (b) that this preference can be reversed by changing the frame of reference used to describe the options – in this case, changing between predictions of number of students enrolled and of shortfalls from the target.

In complex, real-world contexts, the status quo itself may be something of a moving target. For example, if an institution predicts that total enrolment will drop 5% over the next five years, then the possibility of reducing the size of this drop to 2% by expanding to new markets through increased online course offerings could be interpreted as a gain over the anticipated status quo, even though there would still be a net decrease in enrolment (Kahneman & Lovallo, 1993).

In summary, the magnitude and direction of changes from the status quo are more salient than the end states themselves, and the way a decision situation is presented or framed can have a surprisingly large impact on which option a decision maker will chose. It can be a valuable exercise for decision makers to consciously reframe decision options in a variety of ways to test whether the best option remains constant across problem frames or whether it is an artifact of a particular way of viewing the situation (Kahneman & Lovallo, 1993).

Positive Frame (anticipated enrolments)

Option A - Lecture: enrolment will be 120 students*

Option B - Online: 1/3 probability that enrolment will be 150 students and 2/3 probability that enrolment will be only 105 students

Negative Frame (anticipated shortfalls)

Option C - Lecture: enrolment will be 30 below the target

Option D - Online: 1/3 chance that enrolment will be 90 below target but 2/3 probability that enrolment will be 150 (on target)*

Figure 2. Example of impact of framing on decisions under uncertainty (adapted from Kahneman & Tversky, 1984).

Escalation of Commitment

Finally, the phenomenon of "escalation of commitment" in ongoing projects (e.g., Garland, 1990; Karlsson, Juliusson, & Gärling, 2005) is also worth mention. In escalation-of-commitment situations, decision-makers involved in an ongoing project must decide whether to continue to invest resources to follow through on an initial plan (escalating the commitment to that plan) or to abandon the current plan and start with a new plan.

There are three features that define the classic escalation of commitment situation (Moon, 2001). First, significant resources, such as time, money, effort, or even reputation, must already have been invested in the original approach. Second, there must be negative feedback associated with the unfinished task; in academic ICT decisions common forms of negative feedback include unexpectedly high costs, slow uptake or outright resistance from users, and unexpected technical barriers. Third, the decision maker must face the decision of continuing with the original plan or abandoning that plan for a new one.

The decision to escalate one's commitment to a course of action in the face of negative feedback has been viewed as an example of entrapment. Entrapment may occur when one has invested significant resources and feels compelled to continue investing more resources in the same plan, even if it now seems that plan will not lead to complete success (Moon, 2001). Rationally, because one cannot recover such sunk costs, they should not factor into decisions people make about how to move forward. Yet, researchers have shown that people often do consider sunk costs when making decisions (e.g., Wong, Yik, & Kwong, 2006). Further, the more one perceives oneself as responsible for those costs, the more of a factor they become in future decisions (Wong, Yik, & Kwong). Bornstein and Chapman (1995) provided evidence that decision makers view changing paths after having made a large investment in one direction as a waste – or as throwing away the initial investment. Because wastefulness is undesirable, particularly in an era of every-increasing accountability requirements, there is pressure to continue along the path paved by the initial investments.

CONCLUSION

The decision making research has not focused on how people make decisions in the context of education, yet much that this literature has to offer can be valuable to those tasked with making large or small decisions about how educational technologies can best facilitate educational goals. This chapter provides a brief tour of some foundational examples of how human decision making processes diverge from our intuitive understanding of ourselves as rational decision makers.

Although there is a natural tendency to believe both that the decisions we make are rational and not influenced by extraneous factors and that we have control over the critical factors that will enable our project to avoid the pitfalls that similar projects have faced, the judgment and decision making literature shows that these assumptions are usually false. Even the most experienced decision makers take short cuts; they allow their emotions to have unexamined influence over decisions; they fall victim to framing effects; and they face the pressures of entrapment. By being aware of the influence of these processes, decision makers can be better prepared to examine the real reasons for each decision and differentiate between critical factors and the automatically-processed judgments and interpretations that serve us well much of the time.

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