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Emotion in organizational judgment and decision making[☆]

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"I'll have time for feelings after I'm dead. Right now, we're busy."

- Michael Griffin (2006), former Administrator of NASA

Many people believe, as Griffin does, that judgment and decision making (JDM) should be devoid of emotion. Managers who share this belief risk misunderstanding the basis of their decisions and the decisions of those around them. Overlooking emotion will result in missed opportunities not only to correct biases, but also to use emotions as tools to improve decision making.

Scientific research examining the role of emotion in JDM has expanded exponentially in the last several decades. Researchers now acknowledge that emotions constitute, for better *and* worse, potent and pervasive drivers of behavior. Emotions, such as fear and anger, trigger a chain of biological, behavioral, and cognitive reactions; even when fleeting, they alter hormone secretion for hours, trigger readiness for action, and shape the encoding, processing, and recall of information. Emotions, in this sense, form a perceptual lens through which individuals interpret the world.

Emotions pervade JDM processes in both personal and professional contexts, which can overlap. Consider three examples, each derived from results of studies:

1. A manager spends two hours in bumper-to-bumper traffic on the way to work. Upon arrival, she angrily declines a request for a potentially profitable partnership without giving it due consideration.
2. A chronically anxious banker avoids taking higher risks when trading stock options than his competitors do. In turn, he reaps lower returns than they do.
3. A mayor, deeply saddened at the enormous loss her community experienced from a hurricane, settles for an immediate relief option rather than a more long-term solution to failing infrastructure.

To avoid situations such as these, it is useful to develop a nuanced understanding of human emotion. Here we review the empirical evidence, highlighting three key insights for decision making within organizations. First, emotions permeate JDM, taking the forms of expected emotion, experienced emotion, or dispositional emotion. Second, emotions exert effects on JDM via three predictable pathways: content of thought, depth of thought, and implicit goal activation. Third, effects of emotions can be systematically dampened or channeled to optimize JDM, depending on the needs of the situation. Predicting the likely effects of any given emotion creates opportunities to design decision environments in such a way that emotions useful to JDM are enhanced and emotions that may undermine JDM are reduced. In sum, this review aims to provide a foundation for improved JDM within organizations by illuminating the role of emotion.

EMOTIONS ARE UBIQUITOUS

Fig. 1 illustrates pathways through which emotions permeate JDM. We begin by reviewing three different types of emotion

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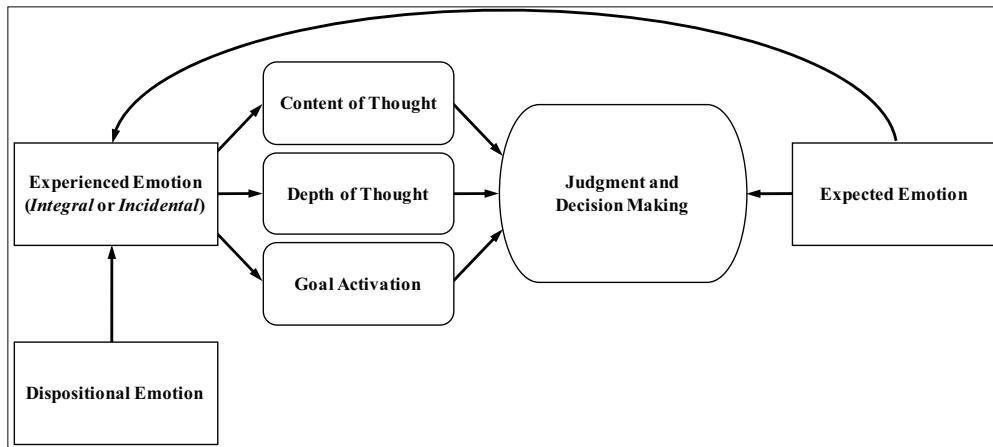


Figure 1 A schematic model of emotion inputs in judgment and decision making, drawn from the Emotion-Imbued Choice Model by Lerner, Li, Valdesolo & Kassam (see bibliography)

that drive decision making in organizations: expected emotion, experienced emotion (either integral or incidental), and dispositional emotion.

Expected Emotion

Although termed “emotions” in the scholarly literature, expected emotions differ from other kinds of emotion we will describe because they solely comprise expectations – i.e., thoughts – about emotions felt in the future. In other words, expected emotions, *per se*, are actually anticipated feelings about future events. For example, suppose an investor must decide whether to sell stocks with poor performance. The decision maker predicts feeling elation if, after her sale, the stocks further decrease in value, but predicts feeling regret if the stocks instead quickly recover their original value. Clearly, such expected emotions will play a role in her selling decision.

Indeed, researchers have found that expectations of regret can exert causal effects on decision outcomes. In one study, for example, researchers compared two employment negotiation situations: one precluded corporate recruits from receiving other salary offers after coming to agreements on salary; the other did not. Results revealed that recruits in the former case willingly settled for less money because they had less potential for regret than recruits in the latter case did. Across this and other empirical studies, the expected emotion of regret most strongly influences decision outcomes when decision makers expect to learn information about their non-chosen alternatives.

Indeed, researchers at the University of Chicago Booth School of Business found that, if a decision maker could avoid learning the outcome of a foregone alternative, she would often elect to do so, though having more information would be of value in a rational marketplace. Thus, an expected emotion (e.g., regret), while generally relating to the future, can trigger subjective experiences of anxiety even at the time of the decision. The combination of regret and anxiety can lead employees to either avoid examining data that might bring bad news or to actually cover it up and hope things will change.

Recognizing the reality that expected emotions sometimes lead even well-meaning employees to avoid finding out potentially bad news, managers can create a culture focused on data-driven, rather than intuition-driven, preferences. More specifically, the culture should reward employees for making tough calls based on evidence, even if the evidence brings bad news, rather than only rewarding employees who bring good news.

Experienced Emotion

“Experienced emotions,” or immediate emotions, are those felt at the time of decision. Researchers organize experienced emotions into two broad categories: integral emotions and incidental emotions. *Integral* emotions, also known as “endogenous emotions,” arise from considering the judgment or decision at hand and therefore reflect relevant (i.e., normative or rational) information. For example, when deciding whether to launch a new project, a decision maker may experience fear stemming from volatile business conditions. This fear constitutes integral emotion and typically serves as a helpful guide. Integral emotion can have many causes. For example, characteristics of possible decision outcomes (e.g., high desirability or likelihood) may elicit emotions such as excitement; uncertain probabilities of outcomes may elicit fear; not having a complete set of available options may induce anger; and comparing and contrasting similar options may cause feelings of frustration or anxiety.

Integral emotion also influences the willingness to insure against different types of risks. For example, researchers found that travelers in an airport who are asked how much they would pay for insurance that covers death caused by “any act of terrorism” are willing to pay significantly more for the insurance than are travelers in an airport who are asked how much they would pay for insurance that covers death caused by “any reason.” The latter kind of insurance is obviously superior because it encompasses all forms of death. Nevertheless, the fear and vivid imagery evoked by considering “any act of terrorism” while in an airport translates into a much greater willingness to pay to avoid it.

Similarly, in organizations, a manager may take more precautions against risks that evoke strong feelings (e.g., losing a deal to a hated rival), even when facing a low-probability risk. For example, a manager may allocate more staff time to a project than needed, wasting vital human capital, simply because a feared outcome looms disproportionately large in the manager's mind. Indeed, empirical evidence indicates that the degree of integral emotional reaction to a risky situation often diverges from more objective assessments. When such divergences occur, emotional reactions override more reasoned inputs. To take a prototypical example, many people fear shark attacks (global death rate: approximately 5 per year) more than they fear much more common events, such as road traffic injuries (global death rate: approximately 1,350,000 per year).

To avoid the trap of being disproportionately swayed by integral emotions, it is useful to explicitly and routinely examine base rates, or the prior probability of a potentially risky event, to determine its likelihood. Knowing the base rate of an event is especially critical for decisions involving resource allocation. For example, you might at first be impressed to learn that 1,000 small businesses experienced no cyberattacks after paying Company X to prevent such attacks. But this statistic may no longer be impressive if we look at the entire population of Company X and find that the base rate of success is only 1/100 (i.e., 100,000 small businesses hired Company X, but the other 99,000 small businesses experienced cyberattacks). The effectiveness of Company X is clearer when such base rate information (i.e., "1,000 people . . . out of how many?") is available. In sum, examining base rates as a regular practice can help bring risk perceptions in line with risk reality, neutralizing the impact of integral emotions.

Incidental emotions, also known as "exogenous emotions," arise from sources unrelated to the choice at hand. For example, sadness emerging from the loss of a beloved family member is incidental to a particular business decision one faces at work. Nonetheless, incidental emotions – often stemming from the most obviously irrelevant triggers (e.g., weather or sporting events) – can influence judgment and choice in organizations. One research study revealed that the amount of sunshine on a given day predicts financial market returns. Likewise, stock market returns drop when a country's popular sports team loses in an important tournament. The underlying theory posits that incidental happiness and sadness, although irrelevant to the decision at hand, lead decision makers to be optimistic or pessimistic regarding their economic prospects. As the examples above depict, incidental emotion potentially biases decision making even more than integral emotion. With integral emotion, the feeling at least arises from the decision at hand (e.g., How much should I pay to avoid cyberattacks, given how much I fear/dread them?). With incidental emotion, the feeling arises from an unrelated event and then bleeds into subsequent decisions.

As most experienced managers would predict, many studies have found that incidental emotions affect our judgments and decisions. In one study conducted by researchers at UCLA Anderson School of Management, incidental anger led decision makers to perceive less risk and thus to escalate their commitment to a prior course of action, even though this course was already failing. It is typical for anger to

trigger a sense of relative invulnerability – one that can make angry decision makers push ahead with their plans without taking time to engage in careful evaluation. Interestingly, the fact that anger also triggers a tendency to oppose existing barriers or impediments can have a beneficial effect in certain circumstances. For example, a study found that incidental anger led decision makers to seek out more disconfirming information (i.e., more oppositional information) than did incidental sadness. In that context, seeking out oppositional information attenuated the otherwise widespread and robust confirmation bias (i.e., the tendency to seek information that favors one's beliefs while ignoring information that does not). As the examples above illustrate, incidental emotion can either hurt (e.g., escalating commitment to a failing course of action) or help (e.g., exposing oneself to disconfirming information), depending on the interaction between the specific emotion and choice context. In situations where it is helpful to take risks, to feel relatively invulnerable, and to oppose an unfair set of circumstances, incidental or integral anger can be very productive. For example, male decision makers induced to feel angry have been shown to earn more money in contexts that reward risk taking. That said, it is far more common for incidental emotion to become a biasing factor in workplace decision making. Envy, anger, fear, and sadness, in particular – when triggered by past events and not arising from facts relevant to the decision at hand – can lead decision makers well off course.

Incidental emotions typically permeate judgment and choice without conscious awareness, making them difficult to counteract. Decision makers are unlikely to regulate themselves when they are unaware of the potential effect of incidental emotion. To help employees avoid escalating commitment to failing courses of action while mad, strategic managers could automate routine sunk cost bias analyses into the planning process. In other words, if an organization routinely calculates future expected value while disregarding the prior investment, it may insulate investment decisions from the effects of incidental emotion. A later section in the paper suggests additional ways to eliminate such carryover.

Dispositional Emotion

Dispositional emotions, also referred to as trait emotions, are tendencies to respond emotionally in a certain way across a variety of contexts and time. Researchers have assessed dispositional emotions using both self-report measures (e.g., simply self-assessing typical levels of anxiety on a 1–7 scale) and physiological measures (e.g., by measuring hormone levels). Results from a team of researchers at Harvard University reveal that some dispositional emotions (e.g., anxiety) appear as early as birth (as measured via different levels of the stress hormone, cortisol). These dispositional emotions also remain highly stable across the life course.

Research reveals systematic links between decision makers' dispositional emotions and their judgment and choice propensities. Multiple studies have found, for example, that dispositionally angry individuals make the same kinds of risk-seeking choices that people who have been

incidentally induced to feel state anger do. As before, this tendency can pay off in situations where taking risks maximizes expected value, but can lead to reckless loss of money in situations where caution is needed.

Taken together, research on expected, experienced, and dispositional emotion provides clear evidence that emotions permeate judgment and choice in organizations. Expected emotions influence experienced emotions (be they incidental or integral to the decision at hand), and dispositional emotions predispose the likelihood of each. Having learned these differences, strategic managers may wish to draw clear distinctions between integral emotion, which can be a useful guide in determining value, and incidental emotion, which more often than not serve as a bias.

EFFECTS OF EXPERIENCED EMOTIONS ON JDM ARE PREDICTABLE

When making evaluative judgments, individuals often think to themselves, "How do I feel about it?" and use their present feelings to form the judgment. This process describes *direct* pathways through which experienced emotions influence judgment and choice. However, experienced emotions also influence judgment and choice in *indirect* ways. As depicted in the figure in the previous section, experienced emotions influence judgment and choice through three primary pathways: content of thought, depth of thought, and goal activation. These three pathways form a potent, predictable link from emotion to decision making.

Content of Thought

Conventional wisdom might suggest that positive emotions would trigger optimism, while negative emotions would trigger pessimism. However, research demonstrates that distinctions between emotions of the same valence (i.e., the same degree of positivity or negativity) matter: the negative emotion of anger, for example, actually produces optimism, while the negative emotion of fear leads to pessimism. As an example, in choices between a sure gain and a gamble, angry individuals find the gamble more appealing, whereas fearful individuals tend to choose the sure thing.

This result stems from the fact that emotions alter the content of thought. Specifically, anger increases perceived control and certainty – two key drivers of risk judgments. Consequently, angry individuals view risky situations more optimistically and make risk-seeking choices, as described earlier. In contrast, fear undermines a sense of individual control and certainty, leading to the opposite effect. These results help to explain why chronically angry individuals are more likely than chronically afraid individuals to support risky actions in organizational contexts.

Opposing risk attitudes caused by fear and anger have also been found in the context of real international events. Following the September 11, 2001 terrorist attacks in the United States, American citizens who participated in a study read real news stories inducing either fear or anger about terrorism. Although the two groups both experienced negative emotions and were similar in all other respects, those induced to be afraid perceived greater risks of terrorism in

the future. On the other hand, those induced to be angry perceived fewer risks of terrorism. This differing pattern for fear and anger held true both for experimentally induced emotion and naturally occurring emotion after the attacks. Specifically, citizens who felt fearful after the attacks advocated for conciliatory policies, whereas those who felt anger after the attacks advocated for more aggressive policies. This powerful but opposite effect of fear and anger – via content of thought – applied even to citizens' policy preferences months after the attacks.

Emotions can also influence the content of thought and subsequent judgments and decisions in a wide variety of settings. Consider recruitment and promotion decisions, which often require managers to make qualitative judgments of how effectively and efficiently employees have performed or will perform their responsibilities. Research shows that emotions can influence such decisions in non-intuitive ways, without decision makers' awareness. For example, sadness and anger, despite both being negative, have opposite effects on how people attribute blame or give credit. When people experience sadness, they consider situational factors to be more responsible for an ambiguous circumstance, even when that circumstance did not trigger their sadness. In contrast, when angry, people perceive individuals (as opposed to situations) to be more responsible for the same event. Thus, managers feeling anger may be more likely to blame individual employees for negative consequences of events. These findings may extend to other workplace contexts, in which an emotional outcome on one project (say, an unfair outcome in a bidding context) carries over and influences blame of employees in a different, unrelated context. While this carryover of incidental emotion can hinder objective performance evaluation, leaders who recognize the need for change can overcome such obstacles by instituting accountability systems, as we discuss in detail later in this paper.

Depth of Thought

Experienced emotions influence judgment and choice not only via the *content of thought*, but also via the *depth of thought* – i.e., how comprehensively one considers a judgment or decision. Shallow thought is easy and requires relatively little effort. Deep thought is difficult and requires significant effort. Historically, emotions were thought to hinder deep, thoughtful processing. In line with this historical belief, emotions that are associated with a high sense of certainty, such as happiness, anger, and pride, do in fact cause people to think less deeply. The sense of certainty associated with these emotions conveys a meta-level sense that one does not need to engage in deep analysis. As a result, when happy people read persuasive messages about policy questions, for example, their judgments depend relatively more on superficial cues, such as the attractiveness and likeability of the speaker, than on the message itself.

Importantly, studies have shown that emotions low on a sense of certainty, such as fear or sadness, cause people to think *more* carefully. The sense of uncertainty associated with these emotions conveys a meta-level sense that more thought is needed. In the case of sadness, this can go to the extreme, triggering a tendency to ruminate. Thus, contrary

to what was once believed about the relationship between emotion and depth of thought – i.e., that emotion necessarily involves little thought – considerable evidence now reliably reveals that only some emotions involve shallow thought. Managers who are aware of the specific feelings that tend to trigger shallow thought – specifically, happiness, anger, and pride – can avoid making decisions when such feelings are activated. This is not as easy to accomplish as it may sound, as emotions such as anger and happiness can lead one to feel highly confident, capable, and ready to act. The best way to avoid being caught in the trap of deciding without sufficient thought is to institute cooling-off periods for all major decisions, which will enable managers to have an emotional re-set that can prevent serious mistakes.

Goal Activation

Emotion theorists have proposed that emotions serve an adaptive function, triggering implicit goals that help individuals quickly address problems they encounter. These implicit goals have been shown to affect decision making in many domains, including routine economic transactions. For example, sadness – which arises from a sense of loss and therefore triggers an implicit goal of replacing loss – leads decision makers to pay more to acquire a new good. Importantly, this does not appear to be a conscious process. In fact, research participants in these studies typically fail to guess the connection between their emotions and valuations for goods – assessed in two ostensibly unrelated studies.

Other studies extended this initial line of thinking to demonstrate how core implicit goals associated with disgust and sadness drive other types of financial decisions. One study, for example, showed that the desire triggered by the feeling of disgust to expel what one possesses is so strong it can overcome the status quo bias (i.e., the preference for the current state of affairs that is often reflected in decision making). In this study, disgust – which carries with it an implicit goal to expel objects – led decision makers to exchange a consumer good they already owned with a new product. These implicit goals can drive financial patience, as well. In one series of studies, participants made choices between smaller financial rewards available sooner and larger rewards available later. Presumably by creating a desire to replace loss, sadness led individuals in the study to accept 13%–34% less money for the privilege of getting it immediately. These findings reinforce the notion that emotions can have strong, specific influences on judgment and decision making via the implicit goals they activate.

EFFECTS OF EMOTIONS CAN BE CHANGED

As described above, despite sometimes arising quickly, emotions can have a lingering impact on our judgment and decisions, even without our awareness. Importantly, research has revealed that many of the effects of emotions on JDM are reasonably predictable, which creates opportunities for manager to harness appropriate emotions while resisting unwanted emotions.

Avoiding pernicious effects is not as simple as suppressing unwanted emotion. In fact, research makes clear that suppression rarely works. Not only do attempts at suppression

typically fail, but they can even intensify the experience (“Don’t get mad.”; “I’m not mad!”) or backfire in another way. For example, trying to suppress a facial display of disgust when feeling disgusted increases related sympathetic nervous system responses, such as sweating and eye-blinking. Attempting to suppress emotion also incurs cognitive costs, as it requires us to monitor the extent to which we currently feel the emotion. Because human brains have limited capacity for multi-tasking, this act impairs the ability to focus on the situation at hand, potentially undermining memory.

Fortunately, studies identify three alternative approaches to optimizing the influence of emotions on judgment and choice: (1) Insulate the decision from an unwanted emotional influence via choice architecture; (2) Alter the emotional experience via regulation; and (3) Harness a counteracting emotion. We describe these three strategies in detail below and suggest ways for managers to increase or decrease the influence of emotion on decision making, for both themselves and for others.

Insulate the Decision from the Emotion via Choice Architecture

Managers and policymakers can use “choice architecture” to set up decision environments to systematically minimize unwanted effects of emotion on judgment and choice. The central idea of choice architecture, a term coined by Richard Thaler at the University of Chicago and Cass Sunstein at Harvard University, is that managers aim to take into consideration what is known about human errors and biases and then design decision environments that will best counteract such errors and biases. The cooling-off periods mentioned earlier represent an example of choice architecture. Such periods are sometimes even written into law. For instance, some U.S. states require a delay before a couple can obtain a marriage license or hold a wedding ceremony. Such a delay can reduce the risk that the decision to wed was taken lightly or driven by fleeting and potentially regrettable emotions. Although managers typically make decisions that are far less passionate than those involved in marriage, the same logic can apply.

Many other forms of choice architecture are also available, and a notable example is accountability. Specifically, telling decision makers before they are exposed to any information in a legal case that they will have to justify the basis for their decisions to an expert audience serves to reduce the role of anger. Angry people who expect to have to justify their decisions engage in more complex and less biased thought processes than those without such expectations, even when they felt the same amount of anger. The anticipation of having to justify one’s decisions leads decision makers to self-critically focus on important information rather than on their own incidental feelings of anger, research reveals. Thus, instead of trying to change potentially biasing feelings, managers can institute accountability for decision processes.

Importantly, the type of accountability involved matters a great deal. Different forms of accountability motivate different social and cognitive coping strategies. Self-critical and effortful thinking is most likely when decision makers

learn prior to forming any opinions that they will be accountable to an audience (a) whose views are unknown, (b) that is interested in accuracy, (c) that is interested in process rather than specific outcomes, (d) that is reasonably well-informed, and (e) that has a legitimate reason for examining participants' judgments. If any one of these conditions is not met, then accountability may fail to motivate the kind of preemptively self-critical reasoning that increases focus on predictive information. Moreover, such accountability may even intensify the tendency to focus on misleading information, further reducing judgment and decision quality.

Alter the Emotional Experience via Regulation

Although suppressing an emotion is difficult and often backfires, it is possible to regulate the experience of emotion and thereby mitigate its undesired effects. The most promising strategy for doing this is *cognitive reappraisal*. This approach, tested rigorously across a variety of contexts, consists of reframing an event or action by adopting a different mindset. Examples include "thinking like a scientist" or "putting oneself in another's shoes." This strategy can be effective even for intense emotions that characterize seemingly intractable intergroup conflict.

In a test of this approach, researchers recruited a group of Jewish Israeli participants for an experiment days before the Palestinian bid for recognition by the United Nations (U.N.). The researchers selected this event because they expected most Israelis to oppose this action and to experience anger if the U.N. granted such recognition. The researchers randomly assigned half of the participants to receive 30 min of simple training in cognitive reappraisal. Specifically, they saw an anger-inducing image, which the researchers asked them to respond to in a cold and detached manner. Participants then practiced this technique on five other pictures. The other half received no such training. The researchers found that, after the U.N. voted to recognize Palestine, participants trained in cognitive reappraisal supported humanitarian policies (vs. military policies) to a greater extent than did those who did not receive this training. Moreover, these differences still held when reassessed after five months. For managers facing an emotional organizational decision, such as whether to merge with a competitor, this type of emotion regulation intervention may help foster a more effective decision-making process.

Harness a Counteracting Emotion

A third promising strategy is to cultivate a counteracting emotional state that has the desired effect. Take sadness,

for example. As described earlier, sadness increases financial impatience at the expense of larger, long-term profit and also makes people spend more to acquire commodities. Although it is important for all people, including managers, to be able to feel sad when they have experienced loss, it is also important to be able to avoid poor economic decision making. One strategy for doing so is to cultivate gratitude. Whereas sadness has been shown to trigger a focus on loss, negativity, and oneself, gratitude has been shown to trigger a focus on gains, positivity, and other people. Moreover, decision makers who cultivate gratitude become even more financially patient than if they were in a neutral state, thus reducing an overall human tendency toward choosing smaller, sooner rewards over significantly larger, later rewards.

These findings imply the possibility that organizational leaders might be able to shift their focus from short-term to long-term goals by adopting a grateful mindset or cultivating appreciation. Notably, inducing gratitude comes with other benefits. Prior research showed that simply writing down a few things one is grateful for each day can lead to improved psychological, physical, and financial outcomes. Likewise, managers may be able to benefit from implementing quick "gratitude journals" as a low-cost way to help themselves overcome a myopic focus resulting from sadness.

CONCLUSION

In recent decades, the scientific study of emotion has blossomed, producing findings now ripe for application to organizational behavior. Reviewing the available research, we identify three key insights for judgment and choice within organizations. First, emotions are ubiquitous. They can consciously and unconsciously permeate judgment and choice, acting as sometimes harmful and sometimes beneficial drivers of decision making. Expecting employees to check their emotions at the door is unrealistic. Second, the effects of emotions on judgment and choice are systematic and predictable. By examining how emotions influence content of thought, depth of thought, and implicit goals, one can better understand how emotions impact judgment and choice. Third, the effects of emotion can be harnessed or unleashed to optimize decision making. Rather than undertaking a fruitless attempt to suppress emotion, scientific evidence supports the following strategies: (1) insulating the decision from emotional influence using choice architecture, (2) altering emotional experience with a proper emotion regulation strategy, and (3) harnessing counteracting emotions conducive to the decisions at hand. Understanding these three key insights will provide a foundation for improving decision making in organizations.



SELECTED BIBLIOGRAPHY

For a comprehensive review of the past 35 years of research on emotion and decision making and an introduction to the emotion-imbued choice (EIC) model, see Lerner J.S., Li Y., Valdesolo P., & Kassam K. (2015). Emotion and Decision Making. *Annual Review of Psychology*, 66, 799–823.

For a more general overview of emotion, its taxonomy, principles, and implications, see Keltner, D. & Lerner, J.S. (2010). Emotion. In D.T. Gilbert, S.T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (317–352). New York: Wiley.

For key principles of emotion and its effects on financial and economic decision, see Han, S., Lerner, J.S., & Keltner, D. (2007). Feelings and consumer decision making: The appraisal-tendency framework. *Journal of Consumer Psychology*, 17(3), 158–168.

For examples of how emotions of the same valence could have opposite effects on judgment and choice, see Lerner, J.

S. & Keltner, D. (2000). Beyond valence: Toward a model of emotion-specific influences on judgment and choice. *Cognition and Emotion*, 14(4), 473–493; Lerner, J.S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology*, 81(1), 146–159.

For additional information regarding the effects and tendencies associated with anger, see Lerner, J.S. & Tiedens, L.Z. (2006). Portrait of the angry decision maker: How appraisal tendencies shape anger's influence on cognition. *Journal of Behavioral Decision Making* (Special Issue on Emotion and Decision Making), 19(2), 115–137.

For the specific effects of anger on risk-taking, see Ferrer, R. A., Maclay, A., Litvak, P. M., & Lerner, J. S. (2017). Revisiting the effects of anger on risk-taking: Empirical and meta-analytic evidence for differences between males and females. *Journal of Behavioral Decision Making*, 30(2), 516–526.

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